

RESEARCH PERCEPTIONS AND UTILIZATION AMONG MASSAGE THERAPISTS IN
SASKATCHEWAN, CANADA

A Thesis Submitted to the College of Graduate Studies and Research in Partial Fulfillment of the
Requirements for the Degree of Master's of Science in the Department of Community Health &
Epidemiology University of Saskatchewan Saskatoon

By

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Abstract

Purpose & Objectives: To foster improved client care and the continued professionalization of Massage Therapy (MT), it is important that MT practitioners' research utilization is more clearly understood. The purpose of the study was to explore Massage Therapists' (MTs) perceptions of research and their self-reported research utilization. Specifically, to 1) describe MT's perceptions of research and their appraised self-efficacy in research literacy and capacity; 2) better understand the nature of MT's research utilization; 3) identify what practitioner characteristics are associated with research utilization.

Methods: Using a sequential explanatory mixed methods design, the study was conducted in two phases. In the first phase, all (815) registered members of the Massage Therapist Association of Saskatchewan (MTAS) were invited to participate in a mail-out survey. In the second phase, semi-structured qualitative interviews using a critical incident framework explored the nature of practitioners' use of research. Univariate and logistic regression analysis were conducted using SPSS.

Results: In total, 333 questionnaires were returned for a 41% response rate. MTAS members reported overall positive perceptions of research as indicated by high endorsement of its value in adding credibility to MT and by majority agreement that MT practice should be based on research. Reported self-efficacy in various research literacy and capacity skills revealed low levels of knowledge and experience. Reported reference to online research databases, reference to peer-reviewed journals, the belief that MT practice should be based on research, and working more than 20 hours per week were all predictive of research utilization. Case study participants described specific events regarding challenges and successes in utilizing research in their practices and key factors underpinning research utilization were issues of access, issues related to the practitioner, issues of the research itself, and issues of impact on care.

Conclusion & Implications: While members of the MTAS perceive research positively, a gap exists between research and practice. Challenges to the diffusion of research appear to be occurring at the stages of research awareness and understanding. Curriculum in MT schools should include more critical appraisal training and more research-based resources. Provincial regulatory status may be the first step to quality training and service delivery.

ACKNOWLEDGEMENTS

There are many people that I wish to thank for allowing me to pursue this passion of learning new information and skills, creating new knowledge, and for sharing any wisdom gained. First, I would like to thank my research supervisor, Dr. Anne Leis for allowing me the opportunity to explore this topic and to learn about the research process. I am also deeply grateful to my entire committee: Dr. Anne Leis, Dr. Michael Epstein, Dr. Kalyani Premkumar, and Dr. Sylvia Abonyi. The opportunity to engage with this group has been an inspiration. Their generosity in giving time and thoughtful feedback was invaluable to me.

I would also like to acknowledge my fellow students, Brenna Bath for her review of the survey and Karen Wood for her feedback on the pilot interview. My colleagues Trish Dryden, Pamela Hodgson, Keith Eric Grant, and Dale Healey are also acknowledged for their aid in reviewing the survey instrument. I am thankful for the interest in my project and the expert feedback from Russ Friesen on the pilot interview. I am indebted to Dr. Sarah Parker for her incredible patience and generosity in mentoring a newbie researcher and to Carisa Polischuk for showing me my way around SPSS. I wish to thank Dr. Bonnie Janzen for her advice on model building.

I must also thank the Holistic Health Research Foundation of Canada for granting funds for this project through the Massage Therapy Research Fund and the Hope Cancer Help Centre Inc. for the preliminary research grant.

I am grateful for the administrative support offered so cheerfully by the CH&E staff, Cindy Elchuk, Kathy Evans, and Cheryl Bolster.

I also acknowledge and thank researchers Carole Estabrooks and Ester Suter for giving me permission to use the survey instruments that they developed.

Finally, I am so thankful for the unwavering support and patience given to me by my husband and son. This wouldn't have been possible or nearly as much fun without the home fires burning so brightly and warmly.

This thesis is dedicated to my colleagues, mentors, and collaborators; those that are members of the MTAS and those across Canada and internationally.

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LIST OF ABBREVIATIONS

CAM	Complementary & Alternative Medicine
CDSR	Cochrane Database of Systematic Reviews
EBM	evidence-based medicine
EBP	evidence-based practice
GPs	general practitioners
KT	knowledge translation
LCSP	London and Counties Society of Physiologists
MTAS	Massage Therapist Association of Saskatchewan
MT	massage therapy
OTs	occupational therapists
PI	principal investigator
PIR	perceived importance of research
PT	physical therapy or physiotherapy
Qual	qualitative
Quant	quantitative
RMT	registered massage therapist
RU	research utilization
SHIRP	Saskatchewan Health Information Research Partnership
SPSS	Statistical Package for the Social Sciences
UK	United Kingdom
VAS	Visual Analogue Scale
WOS	Web of Science

1.0 INTRODUCTION

Massage Therapy (MT) is an old profession that has experienced rapid growth and maturation as a health care profession since the late 1980s in Canada and the USA (1). Survey results of the 2007 Fraser Institute Report revealed an increase in the use of Massage Therapy by Canadians of 12 percentage points from 1997 to 2006 (2). This cross-national survey revealed that 19% of the respondents had used massage in 2006, making Massage Therapy the most common Complementary & Alternative Medicine (CAM) modality used by Canadians in the 12 months preceding the study (2). Massage therapy is considered to be a health care practice that is complementary to conventional medicine. Therefore, as MT is an emerging component of health care services accessed by an increasing proportion of the population, there is a need to establish the extent to which MT practice is based on sound evidence including research.

Additionally, government policy makers concerned with regulation of the health care professions demand the demonstration that all health care practices are evidence-based which includes the use of research in practice (3). Policy and decision makers concerned with remuneration of Massage Therapy services, including government automobile accident insurers and Worker's Compensation Boards, want to ensure that care provided is evidence-based. Referring physicians have similar concerns (3).

Within the MT community there exists a co-occurring agenda for professionalization and improved client care that requires practitioners to engage in evidence-based practice (4). In the provision of health care, research utilization (RU), defined as the use of research findings in one's work (5), is an important component of evidence-based practice (EBP) (5-7). As the volume of published peer-reviewed MT studies is steadily increasing, any gap between MT research and practice threatens to increasingly widen.

The research-practice gap is a concern shared in the delivery of all forms of health care from conventional medicine to CAM. In the US, the Institute of Medicine's Committee on Quality of Health Care in America described the divide between what is known about good quality care from medical research and what persists in practice as a "chasm" (8). It has been stated that

“[N]o one denies the many slips between the cup of science and the lip of application” (9). The problem is global and occurs at the individual, organizational, and system level (10).

This study was designed to explore the status of research to practice within the community of Saskatchewan Registered Massage Therapists (RMTs) who were members of the Massage Therapist Association of Saskatchewan (MTAS). The translation of knowledge from science into the art of massage therapy has not yet been studied in this group. As in all health care little benefit is accrued from the advancements in science either for the health of clients or for the profession in its development, unless the information generated from research becomes part of the knowledge and ultimately the wise practice of practitioners in the field. Research is therefore needed to help to understand the current state of the diffusion of new information from research into MT practice.

As a practicing RMT and MTAS member with over two decades of clinical experience I am uniquely positioned within both the practice and research communities to conduct this study. Also, extensive activity over many years as a MT educator has given me invaluable insight into multiple perspectives of ways of learning, ways of knowing, and ways of incorporating new information for new knowing. Additionally, serving in various volunteer leadership roles with MT discipline-based organizations provincially, nationally and internationally has provided a foundation onto which the purpose and objectives of this study are firmly set down. Further, my involvement with inter-professional initiatives both as a learner and as a facilitator has ground the lens through which I have come to view this phenomenon of research utilization and evidence-based practice as complex and multi-faceted. I bring this experience to this new role as researcher. Above all, my own learning of the systematic process of inquiry led me to surrender to not knowing, to be critically open to all possibilities, and to eagerly anticipate finding both answers and more good questions.

1.1 Study Purpose & Objectives

The purpose of the study was to explore Massage Therapists' (MTs) perceptions of research and their self-reported research utilization.

Specific objectives were to:

- 1) describe MT's perceptions of research and their appraised self-efficacy in research literacy and capacity
- 2) better understand the nature of MT's research utilization
- 3) identify what practitioner characteristics are associated with research utilization

1.2 Research Questions

There were two main questions in this study:

- 1) How do members of the Massage Therapist Association of Saskatchewan (MTAS) perceive the role of research in their work as RMTs.
- 2) To what extent, and how do MTAS members currently utilize research findings in their work?

Additional questions included:

- 1) How confident are MTAS member's in their skills and abilities to find, critically evaluate, and apply research in their work?
- 2) How confident are MTAS member's in their skills and abilities to conduct research?
- 3) What individual factors (personal and professional) are associated with Saskatchewan RMTs perceptions of research?
- 4) What individual factors (personal and professional) are associated with Saskatchewan RMTs self-appraised efficacy in research literacy and capacity?
- 5) What individual factors (personal and professional) influence Saskatchewan RMTs utilization or non-utilization of research?
- 6) What are the sources of practice knowledge that Saskatchewan RMTs use in their work?

1.3 Background & Rationale

To properly position the focus of this study, MTs' RU, it is necessary to describe this topic within the context of a set of inter-related concepts and within the context of RU in other health care disciplines. The concepts of evidence-based medicine (EBM), evidence-based practice (EBP), diffusion of innovations, and knowledge translation (KT), as well as the division of types of research utilization to be considered, all serve as important background to the present study. Intrinsic in each of these concepts are various issues integral to the rationale for the present study. Therefore, I will offer here a brief overview of the pertinent background including terminological issues, development of the field of study in its various forms, and a brief description of the breadth of the topic as it spans across multiple health care disciplines.

It is perhaps impossible to systematically investigate the problem of a research-practice gap in any health care service delivery without acknowledgement of the ongoing discourse in the literature on what constitutes "evidence" in relation to the ubiquitous concepts "evidence-based medicine" and "evidence-based practice" that propose to bridge this gap. In the general background literature "evidence" is far too often used synonymously with "research". It has been argued that EBP and RU are terms erroneously used as synonymous (5,11,12). Estabrooks, (1999b) stated that "the term *evidence-based practice* ought to encompass a much broader range of evidence than the findings of scientific research" (6) (*italics in original*) and that research utilization (RU) is only one component of EBP (6).

EBM has been described in the literature as a phenomenon, an agenda, a movement, a paradigm, and more critically as rhetoric (13) as its call to action underscores the diffusion of new information from the desks and laboratories of researchers into the minds and hands of practitioners. The term "evidence-based medicine" was coined in the 1990's by the Evidence-based Medicine Working Group operating from within McMaster University in Hamilton, Ontario, Canada. The often quoted definition is "the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients" (14), a definition that is also used to denote the broader term "evidence-based practice". The ideal of EBM also

explicitly constitutes use of clinical expertise and patients values or preferences as valuable components of EBM (15).

EBM was proposed as a new model of medical education and practice that would speed up the process of getting new evidence from science into medical practice and ultimately improve the provision of the most effective, safe, and cost-effective health care available. This period thus marked the beginning of evidence-based decision making in both health care policy and practice. Isetta, (2008) summarized the promised model as “convincingly encapsulated in the equation evidence-based healthcare + quality management = maximum health benefit at lowest risk and cost” (13). Additionally this era heralded the transition away from opinion, authority, or experience-based information sharing in health care education.

The theoretical framework of diffusion of innovations was originally developed with a view of helping to understand the process of uptake of new ideas in a non-healthcare realm (16). As a framework it is helpful in aiding understanding of the process and problems in getting innovations from health science research into the minds and hands of those who could and should make use of these innovations. This framework has guided researchers to examine health care providers’ attitudes toward innovation or new ideas from science, as well as their capacity to obtain, decipher, and make beneficial use of new ideas from science (17).

Knowledge translation (KT) has been used as an umbrella term to encompass RU, innovation diffusion, knowledge transfer, research dissemination, research implementation, research uptake, and evidence-based decision making (18). Straus, Tetroe, & Graham (2009), state that the demonstration by research that “health systems fail to use evidence optimally” has spurred the ongoing interest in knowledge translation. These authors define KT as “the methods for closing the gaps from knowledge to practice” (10).

Successful KT or RU, or innovation diffusion, or EBP, requires considerable skills on the part of the end-users or potential decision-makers. Whether the end-user is a policy-maker, practitioner, or even a consumer of health care, there must be access to new information, skills to manage an

increasing volume of information, skills to understand, appraise, and apply information, and time to do all this (10). It could be added here too that there must be inclination or motivation on the part of the decision-maker.

Numerous studies within the last twenty years have variously investigated KT, RU, diffusion of innovations, EBM, or EBP amongst a broad array of health care disciplines. These include early to recent studies from the nursing discipline (7,17,19-26), from medical physician's practice (27,28,29), from allied health care disciplines such as occupational therapists (OTs) (30,31), physiotherapists (PTs) (31,32,33), speech-language pathologists (34), and with specialty groups like children's mental health providers (35) and also amongst a variety of CAM providers (36) including midwives (37,38), Reiki practitioners and homeopaths (39), chiropractors (40), acupuncturists (41), and massage therapists (40,42). The commonality within all these studies is the finding that RU or EBP or EBM in a broad spectrum of health care disciplines encounters numerous challenges.

It has however, been argued that studies investigating research utilization tend to narrowly define and measure RU in a manner that focuses solely on the question of if and how health care practitioners directly apply research findings to practice and that this tendency disregards other ways in which health care practitioners might utilize research (43). Scholars in the field of research utilization science contend that research utilization must instead be conceptualized in three categories: instrumental RU, conceptual RU, and symbolic RU (5,23,44). Estabrooks, (1999a) relabelled these concepts as direct, indirect, and persuasive RU respectively (5).

While instrumental or direct RU is the concrete implementation or application of research findings to practice, conceptual or indirect RU is the use of research findings in the way one thinks about or understands an issue related to practice (5,23,44). Symbolic or persuasive RU refers to the use of research to influence policy (44) or to change the minds of decision-makers (23) and as a "persuasive or political tool to legitimate a position or practice" (5). Persuasive RU has also been described as that which attempts to influence decision-makers about policy or practice relevant to the health of individuals or groups (11).

Nunnelee & Spaner (2002) expand on the description of conceptual utilization of research as follows:

Conceptual utilization refers to increased knowledge, a change in the way someone thinks about a situation (learning about something's existence changes a person whether or not they agree with the findings), a heightened awareness or understanding, or increased sensitivity to people or information (45)

These authors also contend that research utilization ultimately results in change related to either direct or indirect care-giving that may include improved care “as a result of increased knowledge or enhanced professional growth”. They also include the use of research in the form of translation of research-based knowledge into clinical teaching, further broadening the definition of what constitutes the utilization of research by healthcare providers in educator roles (45).

It is this broader conceptualization of RU as including direct/instrumental, indirect/conceptual, and persuasive/symbolic use of research that sets the background for the current study of RU in MT practice. Following others, I will position this study of RU as “the use of research findings in any and all aspects of one’s work” (6) and as it relates to “the uptake, integration and use of empirically derived information, resulting in changes in beliefs, knowledge or behaviour” (21). I agree with Mulhall, Le May and Alexander (2000) who stated that “research is used when it is accessed, read and evaluated with a view to increasing knowledge and understanding. Implementation occurs when changes, based on the results of research, are made in practice” (46).

As shown in this background discussion, the lack of clarity in language and the varying conceptualization of the problem under study require a perhaps uneasy acceptance that assessments of health care professionals’ perceptions and utilization of research and perceptions and utilization of EBP or EBM are equal conceptually. The implication for the current study is that research investigating practitioners’ utilization of research in different health care fields often set the purpose of the study explicitly to assess practitioners’ use of EBM or EBP. However, the available literature contains studies with similar purpose and objectives to the present study and those closely related to the present investigation in purpose and objective will be presented in the literature review.

It is against this background that the current study undertakes to assess Saskatchewan MTs' perceptions' and utilization of research. The status of evidence-based practice has not been investigated in this group. The findings from this study will aid in understanding the current status and also will inform future efforts to enhance knowledge translation within this and other communities of practice.

2.0 Literature Review

The review of the literature here begins with a presentation of the scholarly literature relevant to the present study first from the fields of conventional and allied medicine. I will then offer a review of two studies from the CAM field and finally narrow the review to two studies that include the practice of Massage Therapy. The relevant individual studies are described in considerable detail in regard to the methods used, the operationalization of concepts, and the findings reported to aid in placing my study within the context of investigations from other health disciplines and with respect to varying views and usage of terms related to research utilization and evidence-based practice or medicine.

Studies from Conventional and Allied Medicine

In a seminal study published in 1998, since cited 273 times in WOS, McColl, Smith, White and Field (1998) addressed the then recent calls for evidence-based general medical practice by conducting a study to assess general practitioners' (GPs) attitudes toward EBM and their skills in accessing, interpreting, and understanding evidence (27). The study contained a sample of 302 GPs in a south England region of the UK.

In this survey study, the researchers used visual analogue scales (VAS) in the mailed questionnaire to assess the GPs' attitudes toward EBM in relation to questions that included the degree to which they welcomed the promotion of EBM in practice from 0=extremely unwelcoming to 100=extremely welcoming, agreement that EBM improves patient care from 0=strongly disagree to 100 strongly agree, and the perceived usefulness of EBM in daily practice from 0=totally useless to 100=extremely useful. Participants were also asked to indicate on a VAS the estimated percentage of their clinical practice that was evidence-based.

In addition, respondents' awareness of various sources of research information was assessed using a four point scale including "unaware", "aware but not used", "read", and "used to help in clinical decision making". Respondents' reported level of understanding of various research design and epidemiological terms were assessed on a four point scale including the categories of "it would not be helpful for me to understand", "don't understand but would like to", "some

understanding” and “understand and could explain to others”. Examples of terms offered were “meta-analysis” and “odds ratio”.

The findings of this study showed that most of the respondents had positive attitudes to EBM as indicated by the degree to which they welcomed its promotion in practice. Most agreed that EBM improved patient care and most regarded EBM as useful in daily practice. The results reported for the median value for the estimated percentage of the respondents’ clinical practice that was evidence-based was 50%. It was also shown that the respondents reported low levels of awareness and use of relevant journals, review publications, and research databases including the Cochrane Database of Systematic Reviews (CDSR). Approximately one-half of the sample reported accessing Medline in the last year. Only 40% reported being aware of the CDSR and less than 5% used this resource for clinical decision-making. Regarding the understanding of terms used in EBM, the study authors report that most respondents reported “some understanding” and approximately one-third of the respondents were confident that they could explain some of the terms. Approximately 40% reported having had received formal training in critical appraisal of research.

These authors acknowledge the study limitations related to self-report of knowledge and skills and further suggest that future studies with interviews are needed to help to determine why physicians that report being aware of important research-based resources such as the freely available journals and bulletins, do not use them.

In another study, published in 2004, a survey was conducted to assess hospital doctors’ knowledge and skills regarding EBM for the purpose of understanding potential obstructions to EBP in the context of hospital practice (28). Using a sample of 225 doctors at a University hospital in Denmark this study evaluated doctors self-rated knowledge of EBM concepts, their self-reported skills in critical appraisal of research, their use of information sources, and their self-reported implementation of EBM into practice.

To assess doctors' knowledge of EBM these researchers asked respondents to indicate on a 4 point scale which included the categories: "I understand this and can explain it to others"; "I have a clue, but would like to know more"; "I have no clue at all, but would like to know more"; "I have no clue at all, and it has no relevance to me" on a variety of statements that the researchers regarded as EBM methodological terms. This approach was similar to that of McColl, Smith, White and Field (1998) with some but not all of the same terms used (27).

This list of terms and phrases offered also included a direct statement of "evidence-based medicine" as a methodological term as well as research design and statistical or epidemiological terms such as "cohort study" and "odds ratio". As well as analysing the responses for frequency the researchers computed a "familiarity score" for each respondent based on the average of the rank values applied to each item answer (1=I have no clue at all, and it has no relevance to me to 4=I understand this and can explain it to others) as a measure of self-rated knowledge of EBM.

This study also examined doctors use of various sources of information including textbooks, colleagues, journals, PubMed, other databases, and the CDSR using a 3-point scale from never, sometimes, to frequent use. In addition this study assessed doctors' self-reported use of evidence-based medicine in clinical decision-making on a 4-point scale: "always"; "sometimes"; "never" and "don't know".

The results of this study showed that less than two-thirds had complete confidence in their understanding of the term "evidence-based medicine" and only 4.4% could define and explain all 12 methodological terms. In regard to the computed "familiarity score" as a measure of self-rated knowledge of EBM, the researchers reported that overall the majority of respondents lacked knowledge about the terms as reflected in low scores obtained. The results of the questions regarding information sources revealed that textbooks were the most often consulted source of information. Half of the respondents reported never using the CDSR as a source of information. Additional results reported showed that less than 20% of respondents reported "always" practicing EBM with the majority responding "sometimes" and 5% responding that they "do not know".

The authors acknowledge the limitations inherent in self-rated knowledge, which may not reflect actual knowledge. They also acknowledge that their study questions did not consider other components of EBP but only focused on searching for and appraising evidence. The authors did not state what the other steps not included might be.

In another recent study, surgical specialists were surveyed regarding their attitudes and opinions toward EBM in practice, their self-reported understanding of EBM terms and their awareness and use of evidence-based resources (29). The final study sample consisted on 889 members of the American Urological Association. Specifically, these researchers asked urologists to indicate their level of agreement on a VAS from 0=completely disagree to 10=completely agree to a variety of statements about the role of EBM in urology practice. Examples of statements included “practicing EBM improves patient care” and “urologists should be familiar with techniques for critical appraisal of studies”.

This study also assessed awareness of and use of EBM-related resources. Respondents were asked to indicate which of three categories, “unaware”; “aware but not used”; or “used in clinical decision making”, described their awareness and use of practice guidelines, PubMed, CDSR, and other relevant publications and journals. Drawing on the work of McColl, Smith, White and Field (1998) (27) these researchers also asked respondents to indicate which of the following four categories: “don’t understand and don’t want to know”; “don’t understand but would like to know”; “understand but could not explain to others”; or “understand and could explain to others” best described their knowledge of a variety of EBM related terms. These terms included statistical terms such as “mean/median” and research terms such as “meta-analysis” and “odds ratio”.

Regarding specialists’ attitudes and opinion toward EBM, the authors report that a strong endorsement of EBM was shown. For example, the median level of agreement that practicing EBM improves client care was 8.0 on the 10 point scale and agreement that all urologists should be familiar with critical appraisal techniques was 9.0. In analyzing respondents reported use of information sources, these researchers found that over 70% of survey participant were unaware

of the CDSR and only 7.2% had ever used this resource. Slightly more than one-third reported being aware of or using PubMed and 95% were aware of or using the published clinical practice guidelines for urology. In analyzing the responses to the set of questions aimed to assess understanding of EBM terms the researchers combined the responses of “understand but could not explain to others” and “understand and could explain to others. Ninety-five percent of respondents understood the terms “median/mean” and 23% understood “type 1 error”.

These authors acknowledge limitation of a relatively low response rate (45%). They also acknowledge the possibility that a nonresponder bias may have impacted their results and they report that no demographic data was available for nonresponders to investigate this further. These authors also acknowledge the limitations of self-report in their study.

In a survey study focused on describing physical therapists’ (PTs) attitudes and beliefs about EBP, their knowledge and skills related to EBP, and their attention and access to relevant information, researchers analyzed data from a final study sample of 488 members of the American Physical Therapy Association in 2002 (33). In addition to the purpose of describing PTs attitudes, awareness, and knowledge of EBP, these authors investigated associations between responses regarding attitudes, knowledge, and attention and levels of demographic and practice characteristics such as age and years in practice.

Using a 5 point Likert scale with anchors of strongly disagree to strongly agree these researchers assessed respondents’ level of agreement on various statements including for example “Application of EBP is necessary in the practice of physical therapy” and “EBP improves the quality of care” and “I need to increase the use of evidence in my practice”. In addition, this study evaluated PTs self-reported research education and confidence in EBP skills using the same 5 point scale for level of agreement with various statements such as “I am familiar with the medical search engines (example MEDLINE, CINAHL) and “I am confident in my ability to critically review professional literature”.

Also drawing on the work of McColl, Smith, White and Field (1998) (27) these researchers asked respondents to indicate their understanding of various research related terms such as “relative risk”, and “systematic review” in three categories: “understand completely”; “understand somewhat”; “do not understand”. Attention to research and use of resources was assessed by asking respondents to indicate the frequency per month that they read research articles, used research findings, and used MEDLINE and other databases.

The study findings revealed that the PTs in the sample had positive attitudes and beliefs about EBP with 90% agreeing that EBP is necessary and 79% agreeing that it improves patient care. Eighty-four percent of respondents indicated that they agreed or strongly agreed that they needed to increase the use of evidence in their daily practice. Most reported confidence and knowledge in searching, using databases, and critically appraising research although less than one-half reported agreeing that they had education in the foundations of EBP and search skills. The authors of this paper do not report the response frequencies of level of understanding of research terms in the text of the paper but a figure shows that approximately 20% of the respondents did not understand the term “systematic review” and approximately 50% did not understand the term “meta-analysis”. Regarding what the researchers considered “attention to literature”, it is reported that the majority of respondents read between 2-5 research articles per month and perform fewer than 2 online searches per month.

To assess association between responses of items regarding attitudes and beliefs about EBP, self-rated knowledge and skills, and attention to the literature, these researchers used logistic regression analysis procedures to examine univariate associations by generating odds ratios of the likelihood of agreeing to statements regarding EBP, having education and confidence in skills, and understanding research terms by levels of demographic and practice variables. Younger age, fewer years since licensure, and higher degree attainment were the variables found to significantly increase the odds of expressing positive regard for EBP, having higher rating of skills and confidence in skills, as well as understanding of some of the terms.

The authors of this study acknowledged the limitation of a relatively low response rate (48.8%). In addition they report a potential limitation in the low reliability found for some of their questionnaire items. They also acknowledged a potential response bias in which APTA members who are more interested in EBP and therefore have more favourable views may have been more likely to complete the survey. Also, these authors regarded the possibility that responses to questions about EBP may be influenced by social acceptability as EBP has become a main emphasis in physical therapy.

A Study from Nursing

An early study conducted by Carole Estabrooks, a scholar in the field of research utilization, with results published in three papers and available in an unpublished doctoral dissertation, explored a conceptual structure of RU in nursing and the individual determinants of RU (5,6,47). The final study sample consisted of 600 members of the Alberta Association of Registered Nurses.

In an effort to model the individual determinants of nurses RU, Estabrooks measured, within the questionnaire, 10 factors or concepts that were considered to have a potential to directly influence RU. These concepts or factors included measures of nurses' activism, affiliation, attitude, autonomy, belief suspension (willingness to suspend belief in prior information when it is contradicted by research, cosmopoliteness, dogmatism, problem solving ability, theoretical orientation, and trust (in research). She also tested 16 personal and professional factors that included demographic variables and practice characteristics such as age, sex, level of education, number of hours worked per week, years worked, in-services (continuing education opportunities) attended and other personal and nursing-work related factors.

The major findings from this study of nurses RU that are relevant to the present study relate to what was and what was not found to directly influence or predict RU. In the final model, attitude, belief suspension, and in-services attended were the only three significant determinants of overall RU. Variables that were not found to be significant that also hold relevance to the

current investigation were age, sex, years worked, level of education, and hours worked per week.

Another aspect of Estabrooks study that is relevant to my investigation relates to data collected on nurses sources of practice knowledge. The respondents were asked to indicate on a 5 point scale from “never” to “always” the frequency with which they utilized various sources of knowledge in their nursing practices. The two most common sources of knowledge reported were “information that I learn about each patient/client as an individual” and “my personal experience of nursing patients/clients over time”. Information learned in nursing school was rated third in frequency and information from nursing journals, medical journals, nursing research journals, and textbooks was reportedly rated in the bottom five for frequency of use. In a related question about sources of research information, the study author reports that while “nursing journals” was the most commonly rated source of research information analysis of responses revealed that trade magazines and newsletters were often considered in this category.

The Estabrooks study served as a major contributor to my Master’s thesis work. First, items from the detailed questionnaire developed to assess nurses’ RU were modified and used with permission of the author as part of the questionnaire developed for use in the current study of Saskatchewan RMTs’ RU. Secondly, Estabrooks’ work provided a conceptual framework in which to define RU. Specifically, using structural equation modelling, Estabrooks demonstrated empirical support for a model of research utilization whereby overall utilization reflects and encompasses direct, indirect, and persuasive use of research. She showed that a global question, regarding overall RU serves as a sufficient measure to “tap into” all three kinds of RU.

She offered survey respondents the following definition of overall research utilization: “The use of any kind of research findings (nursing and non-nursing), in any aspect of your work as a registered nurse. Do not count as research, things you learned in the nursing school where you did your basic nursing training”. In the study, respondents were instructed to respond to the global question: “Overall, in the past year, how often have you used research in some aspect of

your nursing practice?” This question served as the outcome variable for nurses’ research utilization and was modified to serve as the outcome variable in the present study on MTs’ RU.

Estabrooks identifies the low response rate in her study (40.67%) as a study limitation due to the potential of a response bias and advises caution regarding making generalizations to the larger population of nurses.

Two Studies from CAM

In a study purported to address the attitudes of CAM practitioners to EBP, Stomski, Grimmer-Somers, & Petkov (2008) surveyed Australian acupuncturists with the objective of assessing their attitudes toward EBP, their use of research, and to determine what factors predicted research use (41). The investigators mailed a questionnaire to 109 acupuncturists in South Australia and the resulting sample consisted of 72 acupuncturists, 12 of whom were considered medical acupuncturists (GPs or other medical specialists) and 60 non-medical acupuncturists. Responses from the two groups were first considered and presented separately, then compared.

The survey questionnaire asked participants to indicate their practice setting (for example private practice, hospital, or other facilities), their highest educational level achieved (diploma, post-graduate diploma, Bachelor’s degree, Master’s Degree, PhD, other), training in research (yes/no), the number of years qualified, experience of doing research (yes/no), and to estimate the percentage of their work week spent on: patient care; management; staff/student education; and research activities. Research activities were defined by the researchers as: reading articles, searching for evidence, discussing research findings, journal clubs).

In addition respondents were asked to indicate on a 5 point Likert scale from strongly disagree to strongly agree, their level of agreement with seven statements the researchers considered as relevant to the perceived importance of research such as “Research is not important for the growth of your professional practice” and “Finding and reading research evidence is of no interest to me” and “Treating patients is more important than reading and finding research” and “Doing research is of no interest to me”.

Results presented in tabular form show that no respondents agreed or strongly agreed that research is unimportant. The researchers describe their further data analysis as having assigned numeric values to the 5 categories (5=strongly agree; 3=neutral; 1=strongly disagree) such that higher scores indicate greater interest in research. It is unclear how this is so as statements such as “Doing research is of no interest to me”, where a “score” of 5 =strongly agree would indicate lesser interest in research. The authors make no mention of reverse scoring the relevant items. Further, the investigators also report that “aggregate values” were calculated including all responses on perceived importance of research (PIR) (7 statements) to represent a PIR domain value with a possible range of 7-35. These values were used to represent means and standard deviations to compare the two groups of practitioners (medical and non-medical acupuncturists) and in correlational analysis with demographic and practice characteristics of the respondents.

Between group analysis revealed a significant difference between the proportion of time spent on research activities with non-medical acupuncturists spending more time than medical acupuncturists on research activities. They report no differences on PIR values between groups and found that all viewed research positively and all prioritized patient care over engaging in research activities. They also found a significant negative correlation (using Spearman’s rho) between the number of years in practice and the PIR score, but only for the non-medical acupuncturists. This finding of correlation is reported as a “predictive” factor of perceived importance of research.

The study authors advise that due to the small number of responses from medical acupuncturists, the generalizability of their study findings to other medical acupuncturist must be viewed cautiously. They do however state that their survey results are generalizable to the South Australian non-medical acupuncturist population with respect to the high response rate from this group. This study has limitation not acknowledged by the study authors that center on the lack of clarity in scoring items in the presentation of percentages, means, and standard deviations and in the creation of aggregated values to indicate a perceived importance of research (PIR) domain score.

An exception to the largely common finding of high regard for the importance of research is shown in a qualitative study regarding the views of selected leaders in the fields of chiropractic, homeopathy, and Reiki practice (39). These researchers report that in interviews conducted with practitioners from these three areas of practice, participants' opinions about the importance of research offered divergent perspectives regarding the need for research evidence for effectiveness, safety, and cost-effectiveness. Reportedly the chiropractors interviewed were unanimous in their views that research evidence on effectiveness is essential to their profession, homeopaths were divided in their opinions on the value of effectiveness research and all Reiki practitioners but one considered effectiveness research to be unimportant. The authors of this paper conclude, in reference to the interviews with the Reiki representatives, that "the pattern for this group was clearly a negative response to the whole concept of scientific research on their healing practices" (39).

A Study of Chiropractors' and MTs

A recent study evaluating Alberta massage therapists' and chiropractors' perceptions of research, use of research, and level of perceived research literacy and capacity skills was conducted by Suter, Vanderheyden, Trojan, Verhoef, and Armitage (2007) (40). This survey of members of the Massage Therapist Association of Alberta and the College of Chiropractors of Alberta described and compared the sociodemographic characteristics, perceptions of research, use of research in practice, information sources used, and self-reported level of skills in research literacy and capacity in these two CAM groups. In addition, this study explored predictors of the application of research findings in practice for the study participants. The final study sample consisted of 160 completed questionnaires from the massage therapists and 323 completed questionnaires from the chiropractors. The study findings reported here will focus mostly on those related to the responses of the MTs.

A mailed questionnaire consisted of demographic questions and questions about previous research participation experience and previous research education. In a section on perceptions of research respondents were asked to indicate on a 5 point scale from strongly disagree to strongly agree their level of agreement with various statements such as "research adds credibility to my

discipline” and “research leads to improved patient care” and “clinical practice should be based on research”. A “don’t know” category was also offered.

In a section on use of research respondents’ were asked to indicate on a 4 point scale from “never” to “always” what best describes their response to a series of questions such as “I apply research findings in my practice” and “I discuss relevant research with my patients”. Also, respondents were asked to respond on a 4 point scale from “never” to “at least once per month” the frequency with which they use a variety of research-based information including choices such as colleagues, websites, handbooks, peer-reviewed journals, PubMed, the CDSR and others. Lastly, respondents were asked to select the best description of their skills on a 4 point scale from “know nothing and have no practical experience” to “know quite a bit, and would not need assistance” regarding statements such as “conducting a literature search” and “reading and appraising research” and “designing research studies”.

It was found that both groups had positive perceptions of research with 91.9% of MT respondents agreeing or strongly agreeing that research adds credibility to their discipline. The majority (65.8%) of MT respondents reported that they sometimes apply research findings in their practice while only 13.3% responded that they always apply research findings in their practice. Only 29.9% of MT respondents reported using peer-reviewed journals as an information source at least once per month. Less than half of the MT respondents reported having some experience and not needing assistance in conducting a literature search (46.2%) and reading and appraising research (42.7%). Only 13.4% of MT respondents reported experience and knowledge in research design. Logistic regression analysis in the study revealed that more frequent reference to peer-reviewed journals and strongly agreeing with the statement that “research adds credibility to my discipline” were the two variables that predicted application of research findings in practice in the two disciplines.

This study found relatively low levels of research literacy and capacity in both groups studied (chiropractors and MTs), limited use of evidence-based information sources, and relatively low utilization of research in practice while highlighting that most practitioners perceive research

positively and acknowledged its importance in enhancing credibility and in improving patient care. Regarding perceptions of research, the findings showed that a significantly greater number of chiropractors than MTs believed that research education should be a mandatory component of clinical training. There were also significant differences between the professions in their self-reported use of research in applying research findings to practice, discussing research findings with colleagues, and using research to change conditions, policies or practices with more chiropractors than MTs reporting “always” using research in these ways.

Regarding use of research based resources, a greater percentage of chiropractors than MTs reported frequent (at least once a month) use of the CDSR, PubMed/Medline/other databases, peer-reviewed journals, websites, and colleagues. Significantly more chiropractors than MTs reported confidence in their research literacy skills (conducting a search, reading and appraising research) and their research capacity skills (designing research studies and identifying bias in research).

These authors acknowledge the potential of a response bias in that those with more positive perceptions of research in both groups may have been more likely to complete and return the survey. They note the low response rate (38.8% for the chiropractors and 24.6% for the MTs) as hampering the generalizability of the study findings. This study contributed greatly to my own investigation practically in the use with permission of essential components of these authors questionnaire and conceptually in the way I think about research utilization as it pertains to the field of Massage Therapy.

A Study of MTs

Stuttard conducted a study published in 2002 that assessed the extent to which the members of the Northern Institute of Massage in the United Kingdom (UK) were aware of the need for research and to assess their use of evidence-based practice in their work (42). The study included the use of a focus group consisting of eight volunteer members of the London and Counties Society of Physiologists (LCSP) which is a professional society of osteopaths, remedial masseurs and manipulative therapists. The purpose of the focus group was to gather data

regarding the participants' views and opinions with the goal of informing the generation of questions for a postal survey. The postal survey was then mailed to a random sample of 450 members of the Northern Institute of Massage, resulting in a final survey sample of 103 members from England and parts of Ireland. A second focus group of eight participants was conducted to gather additional data. The author does not report how this group was selected and its purpose is unclear other than to identify their perceptions.

The survey questions included questions of qualification (as a masseur), years since qualification and number of hours worked per week. A question was asked regarding whether or not respondents were aware and had read a report on complementary medicine that was published in the year 2000 by the House of Lords Science & Technology that recommended, among other things, that all UK CAM practices become evidence-based. Additional survey questions included the frequency with which respondents' read research (rarely, sometimes, or often), the extent to which they understand the research process (not very well, reasonably well, very well) the extent they use research (rarely, sometimes, often) and how important is an evidence base for massage (not important, quite important, very important). A final open-ended question solicited responses to how the participants believed the massage profession in the UK should proceed to develop evidence-based practice and research.

The results of the survey questions revealed that most respondents had been qualified to practice for more than 10 years, most were aware of the House of Lords report yet only about ¼ reported having read it, approximately one-third responded that they did not read research about massage and reported not understanding the research process. Most reported sometimes using research in their practice with 14% reporting that they often use research in their practice. Approximately two-thirds considered an evidence base for practice to be very important.

In analysing the open-ended question soliciting respondents' views on how to move forward in developing EBP and research for the profession, the author summarized the main themes. The first theme identified and reported was a perceived need for more research and concerns shared about the unquantifiable nature of the therapeutic relationship as a perceived barrier to massage

research. A second theme identified was a perceived need for a task force or other form of leadership within the organization that should include links with the University, establishment of a research network, and a research strategy. A third theme was a perceived need for more educational opportunities regarding research skills in finding and reading research and improved access to research for members. In addition respondents reportedly viewed increased opportunity for discussion and presentation of new ideas through networking as a need. Also noted here was a perceived need for recognition of those participating in research to promote a “culture of writing and publishing”.

A fourth theme identified was a perceived need for greater communication between professions for the purpose of sharing good practice and to improve the profile of the massage profession. A fifth and final theme identified by the investigator was the perception that regulation of massage in the UK was seen as a significant need to enhance the training of massage practitioners and to aid in the development of the profession.

The author acknowledges that there is limited discussion in the study regarding the data collection and analysis from the focus groups and contends that this is because the main component of the study was the postal survey. It is unfortunate that there was not more information offered from the focus groups. An additional limitation of this study relevant to my own study is that the investigator did not, apparently, define for the survey participants what constitutes “research”. My criticism is that asking participants if they read research, understand the research process, and use research in their practice without defining “research” is a shortcoming of this study. Understandably the task of accessing “evidence-based practice” is a difficult endeavour but this study has quite oversimplified.

Summary of the literature review

These studies illustrate a gap between research and practice in disciplines as varied as massage therapy and urology. This gap persists despite a common finding of positive regard for research and evidence-based practice. The approaches to assessing practitioners’ attitudes toward research or evidence-based medicine or practice were remarkably similar. There appears to be

considerable consensus that endorsement of various beliefs about research serves to indicate perception or attitude about this topic.

The approach to assessing competence in EBP or EBM or RU and the level of complexity considered to constitute necessary skills varied dramatically. Some of the studies reviewed assessed participants knowledge of epidemiological terms as an indication of their competence in evidence-based practice. Others simply asked respondents to state their level of confidence in their skills related to specific research literacy and research capacity skills such as searching the literature or conducting research respectively. All these studies showed considerable room for improvement in confidence and skills in finding and critically appraising the findings from scientific research.

Regarding the assessment of use of evidence-based practice or evidence-based medicine or research utilization, the relevant studies employed diverse strategies revealing that the topic can be viewed through many different lenses. However, regardless of the approach taken, these studies show the utilization of research to be wanting. This lack of utilization of research demonstrates that the research-practice gap persists in health care practice from conventional medicine to CAM.

3.0 STUDY METHOD

3.1 Guiding Conceptual Framework

Diffusion of innovation has been used as a theoretical framework for exploring the broad field of RU by numerous researchers (17,18,48,49). Roger's Theory of Innovation Diffusion describes the stages involved in the adoption of new ideas, practices, and behaviours by individuals (16). Rogers (2003) proposes that the process of diffusion occurs in the sequence of stages from knowledge of the innovation, (or awareness of the innovation) persuasion (which involves the formation of an attitude toward the innovation), decision (to adopt or reject), implementation (use of the new idea), and confirmation (of the decision to adopt or reject).

Central to diffusion of innovation theory is that attitude is critical to moving the adopter from the knowledge and persuasion stages into the decision stage where the adopter decides whether or not to move forward into the implementation stage (16). Various characteristics of an innovation have been identified within this framework that influence adoption and these are: the relative advantage or benefits the innovation offers, the compatibility of the "new idea" with the values, beliefs, past experiences, and perceived need for the innovation, the complexity of the innovation whereby the greater the perceived complexity hampers adoption, the trialability of the innovation, and its observability in that the results of the innovation are visible to others.

The overarching element within the theoretical framework of diffusion of innovation is that it is a social process. Rogers (2003) emphasizes that new ideas and the adoption of new ways of doing things spread through interpersonal networks. Underpinning the framework is that communication in the creation and sharing of information must take place in order for innovations to spread. This communication requires a channel or channels by which messages concerning innovations get communicated to those who might adopt them. Further, the innovation is spread through communication channels, over time, and is critically influenced by social systems, norms, the views and actions of opinion leaders, and the consequences resulting from its adoption and implementation.

Diffusion of innovations, as a theoretical framework, is helpful in understanding, in explaining and in predicting the diffusion of new ideas. For the purposes of this investigation, I am interested in innovation as current, defensible, scientifically derived information and knowledge as “new ideas”. This conceptual framework is particularly meaningful in the MT professional context as RU in MT practice *is innovation*; it is a new idea and a new way of doing things. The practice of Massage Therapy has historically been based on traditional knowledge and educational practices have not fully developed to include the enculturation of systematic inquiry in the education and training curricula and post-graduation education and practice. Perhaps in the early stages in a professions development, knowledge, persuasion, decision, implementation and confirmation of the process of research utilization supersedes the actual ideas and practices to be communicated from research.

3.2 Design

This study was of a sequential explanatory mixed methods design centered in a dialectical stance which deliberately invites opposing ideas into the inquiry process about the phenomenon of interest (50). Purposively using different paradigms of inquiry within this one investigation was appropriate in studying RMTs’ perceptions of research and their research utilization as the approach is both rooted in and reflective of different ways of knowing and valuing while embracing the potential tensions and contradictions in integrating multiple perspectives. With over twenty years of experience in the MT field it is my assumption that the profession itself currently occupies a juxtaposition of divergent epistemologies and yet maintains amid the tensions and contradictions. Although very close to the topic, I was careful throughout the study to bracket my own bias toward the value of research in MT practice. By maintaining a study log, talking with committee members and my research supervisor and by stringent use of reflexivity I strove to be aware of my own perceptions and how they could influence both the questions that I asked in this research project and the interpretation of findings.

This study therefore attempts to both honour and investigate an integration of perspectives and it was conducted in two phases. In the first phase, quantitative data was collected from the study sample of members of the Massage Therapist Association of Saskatchewan (MTAS) registered

in 2009 using a survey instrument to answer specific questions of provider characteristics, research literacy and capacity, as well as their perceptions of research and use of research. In the second phase, semi-structured qualitative interviews were conducted with six MTAS members. These interviews served to elucidate findings from the statistical analysis and further explore the nature of practitioners' use of research, and challenges and successes experienced by practitioners not captured by the quantitative questionnaire. As an exploratory case study design, rather than attempting to achieve saturation, the information from selected cases provided insight and discovery to add to the knowledge base regarding MTs perceptions and utilization of research (51).

Therefore methods were mixed in both the research objectives and the data collection and by the inclusion of information obtained in the two phases in discussion of the study findings. This integration enabled results to be compared to the existing literature as well as to facilitate exploration within the practitioner context. Further, using both quantitative and qualitative research strategies deepens the understanding of issues under investigation in this study and offers additional avenues for future research.

3.3 Ethical Approval

Prior to the commencement of data collection, this study was granted ethics approval by the University of Saskatchewan Behavioural Research Ethics Board.

3.4. Quantitative Methods

3.4.1 Sample

All 815 registered members of the Massage Therapist Association of Saskatchewan (MTAS) were invited to participate in a mailed survey. Returned questionnaires yielded a total sample of 333 MTs who completed the self-administered survey. The MTAS is a registered non-profit organization that exists to promote Massage Therapy. As massage therapy as a discipline does not have government bestowed status as a regulated health care profession in Saskatchewan; the MTAS also serves in the protection of the public. Membership in the MTAS requires the

successful completion of written and practical membership qualifying examinations. To be eligible, Saskatchewan Massage Therapy graduates must hold a diploma from an accredited school of Massage Therapy with no less than a 2200 hour curriculum. To maintain membership in the MTAS, R.M.Ts must earn continuing competency credits, carry professional liability insurance, and pay membership dues. The MTAS Corporation has developed and maintains standards and regulations in the form of by-laws, practice standards, a detailed code of ethics, and a formal complaints process.

3.4.2 Instrument for Quantitative Data Collection

The aim of the instrument was to assess Saskatchewan R.M.Ts' perceptions toward research and the extent of current use of research in their work. Permission was obtained to utilize and modify two existing survey instruments: Perceptions and Use of Research in Complementary and Alternative Medicine in Alberta (40) and The Research Utilization Survey used in nursing and allied research (52). The survey used in the present study consisted of 21 questions divided into 7 sections: Perceptions of Research, Use of Research, Overall Research Utilization, Research Education, Research Experience, Sources of Practice Knowledge, and Demographic Inventory. Questions 2, 5, and 11 are modified items from the Research Utilization Survey (52) Questions 1,3, 4, 6, 8-10 are modified items from the Perceptions and Use of Research in Complementary and Alternative Medicine in Alberta (40). The survey instrument is included in Appendix A.

The questionnaire developed for this study was first reviewed for feedback by the thesis advisory committee and suggested revisions made. It was then pretested using expert elicitation from five reviewers. The expert panel of reviewers were researcher-educator-practitioners from the Massage Therapy, Chiropractic, and Physiotherapy fields. Suggested revisions were made in question wording and questionnaire content. The survey was pilot tested on a small sample of out of province RMTs known to the PI in order to determine readability, phraseology, time to complete, and any issues or problems. Of the 24 delivered pilot surveys 38% were completed and returned and additional revisions for question clarity were then made.

3.4.3 Procedures

With the support of the Massage Therapists Association of Saskatchewan office staff and using MTAS office procedures, a letter of invitation (see Appendix B) and self-administered paper and pencil questionnaire (see Appendix A) accompanied with a self-addressed, stamped envelope was mailed to the existing membership.

A pre-notice email message was sent to all members with known email addresses and a pre-notice letter to those without email contacts one week in advance of the mailing of the questionnaire, advising members of the study and asking for their cooperation upon receipt of the survey by mail. (See pre-notice message in Appendix B). Two weeks after the initial mailing a second message was sent to members reminding them of the importance of the study and of a high response rate (see Appendix B). Four weeks after the initial mailing a second letter was sent from the MTAS office to all non-respondents reminding them of the importance of the study and of a high response rate accompanied by a second copy of the questionnaire (see non-respondents follow-up letter in Appendix B). Multiple contacts and switching contact modes have been shown to be effective in improving response rates in survey research (53).

3.4.4 Data processing

Excel and PASW Statistics GradPack 17.0 for Windows were used to process the survey data. I established a codebook prior to the data entry and then entered the data into the SPSS database and cleaned the data by checking indicated and missing responses. Additionally, I then checked and verified for accuracy 10% of the completed surveys. Most respondents answered all questions in the survey and missing responses were negligible.

3.4.5 Overview of Analysis of Quantitative Data

In order to meet the objectives of the study and to answer the research questions, descriptive analysis (mean values, frequency distributions) was used for variables related to respondents' demographic and practice characteristics, research perceptions, reported self-efficacy in research literacy and capacity skills, research use, overall research utilization, sources of research-based information, and sources of practice knowledge.

Further, univariate analysis (χ^2) was used to assess relationships between research perceptions and respondent characteristics, relationships between self-appraised research literacy and capacity and respondent characteristics, and relationships between overall research utilization and respondent characteristics. Multivariate analysis (binary logistic regression) was used to determine what factors influence the outcome of overall research utilization while holding other associated variables constant in order to describe a model of research utilization that fits the study data.

To describe the sample: Demographic Inventory

Frequency procedures were executed for each variable to describe the participants demographic and practice characteristics including age, sex, the year in which MT diploma was received, the number of years worked as a MT, the number of hours of the MT diploma program attended, the highest completed level of post-secondary education(diploma, Bachelor's degree, Master's degree, Doctorate degree, or other), current enrolment in post-secondary education, number of practice hours per week, practice setting (sole practitioner, MT clinic, Chiropractic clinic, Physiotherapy clinic, multidisciplinary clinic, spa, or other), and practice orientation (relaxation therapy, treatment of musculoskeletal complaints, or other). (See Survey instrument in Appendix A)

To facilitate the description of the sample and to assess the relationship between the year respondents report having graduated from massage school and the number of reported years of practice experience, raw data regarding the year respondents received their MT diploma were transformed to create a new variable reflecting graduation in 2005 to 2009, 1999 to 2004, 1989-1998, and 1970 to 1988. Raw data regarding the number of years respondents have worked as a Massage Therapists were transformed to create a new variable reflecting years in practice as less than 5 years, 5 to 10 years, more than 10 to 20 years, and more than 20 years.

Age, sex, and years in role as an MT have been previously investigated as potentially important demographic characteristics in assessing MTs beliefs about the importance of research (40). Data collected in this study includes year of graduation as well as reported years of practice experience. The descriptive analysis (frequency distributions) of these two variables enabled a more detailed description of the sample, and a comparison of time in practice experience relative to time since graduation added information previously unknown. Additionally, the year of graduation may be an important variable to consider in the investigation of research perceptions and utilization as massage school curriculum has changed over time in Saskatchewan.

Also, this study included the collection of data regarding length of MT training program (in hours of instruction), a variable not previously investigated that has considerable political implications in the MT field. While MTAS membership requires a minimum of 2200 hours on program length to challenge the membership qualifying examination, practitioners graduating from Saskatchewan massage therapy schools prior to the late 1990's who were "grandfathered" into the Association membership may have experienced shorter training programs. Further, labour mobility across Canada certainly could result in some MTAS members having received their MT training in British Columbia where the standard of program length exceeds 3000 hours.

In this study, the collection of data regarding the number of practice hours per week, MTs highest reported level of academic education, and current enrolment in post-secondary education with analysis of the relationship between this practice characteristic and MTs research perceptions, research skills, and research utilization adds new information to this topic of investigation. Data collection and analysis regarding MTs practice setting and practice orientation provides potentially important information not previously investigated. Two particular aspects of practice setting and practice orientation that have garnered substantial political debate within the MT field are a perceived division between therapists who work in Spa settings versus all other practice settings and those whose practice orientation is relaxation therapy versus the treatment of musculoskeletal complaints. Analysis of these variables with respect to MTs perception and utilization of research adds meaningfully to the debate.

No reportable data is available from the MTAS for comparison regarding the representativeness of the study sample.

To describe MT's perceptions of research and their appraised self-efficacy in research literacy and capacity (Objective 1)

The following definition of research was provided to survey participants to help ensure common interpretation of what constitutes "research":

Knowledge generated through the scientific or systematic process of inquiry by a trained student researcher, practitioner-researcher, or academic researcher. To count as research, scholarly work would be peer-reviewed (scrutinized and screened for quality by other experts) and published in a journal or book, or online in a collection like the Cochrane Library, or presented at a research conference or symposium. Some examples of research would include clinical case reports, case studies, surveys, case-control and cohort studies, clinical trials, randomized controlled trials, systematic reviews and meta-analyses.

To answer the research question of how do members of the MTAS perceive the role of research in their work as RMTs, participants' perceptions of research were tabulated as reflected by their responses on a 4 point Likert scale from "strongly disagree" to "strongly agree" to a series of statements regarding beliefs about research. A check box was provided for a "don't know" response. In addition, participants reported their willingness to change beliefs or practices when information from research contradicts previously held knowledge. Responses were tabulated from a 4 point Likert scale from never willing to always willing in response to the question "How willing are you to change your beliefs or practice when information from research contradicts something you, A) learned prior to massage school, B) learned in massage school, and C) learned in your practice experience").

For the univariate analysis used to meet the first study objective of describing MT's perceptions of research, data from participant responses to the perception statements were transformed to create new variables of "overall disagree" and "overall agree" for each statement of belief regarding research. Participants' responses to the question of how willing they are to suspend belief in prior knowledge when research information contradicts this knowledge were recoded to create new variables of "never/rarely/sometimes" and "always".

The raw data from the demographic inventory as well as questions pertaining to research education and experience were transformed to create new variables for the purpose of cross-tabulation used to explore relationship between research perceptions, self-appraised research literacy and capacity and overall research utilization. The new variables created were: age (40 and under; over 40 years of age), year received diploma (in the last 10 years; more than 10 years ago), number of years in practice (10 or less; more than 10), highest level of education (MT diploma only; MT diploma plus other post-secondary education), number of practice hours per week (20 or less; more than 20), practice setting (sole practitioner; other), practice orientation (treatment of musculoskeletal complaints; other), research experience (no experience in participating in a research study; experience participating in one or more studies). The remaining variables assessed were completion of a research literacy or methods course (yes; no) and participants' sex.

To answer the question of what individual factors (personal and professional) are associated with MTs perceptions of research, univariate analysis (chi-square) explored the association between statements considered important indicators of research perception and participants' demographic and practice characteristics. The following statements considered relevant to the study objective where the scope of responses was sufficiently diverse were further explored in the univariate analysis:

- 1) Belief that MT practice should be research-based
- 2) Belief that research literacy education should be mandatory in MT training
- 3) Belief that research capacity education should be mandatory in MT training
- 4) Belief suspension or willingness to change beliefs or practice when information from research contradicts something learned prior to or in massage school or from practice experience.

It was also considered important to the objectives of the study to explore the relationship between the level of agreement that MT practice should be informed by research and participants' demographic and practice characteristics. The belief that MT practice should be

informed by research has not been previously investigated and data regarding this belief as an indicator of how MTs perceive research adds to the body of knowledge and understanding of MTs research perception.

In addition, univariate analysis was used to compare the level of agreement on related, yet different statements indicating respondents' perception of research: the belief that MT practice should be based on research with the belief that MT practice should be informed by research and the belief that education in finding, critically evaluating, and applying research should be a mandatory component of training in MT with the belief that education in conducting research should be a mandatory component of training in MT. The level of agreement that MT practice should be informed by research and/or based on research and a comparison of the consistency with which respondents hold these beliefs adds meaningfully to the topic and provides direction for future research to consider.

Previous research has investigated MTs beliefs regarding mandatory research education but did not specifically collect data that makes a distinction between research education pertaining to literacy skills (such as finding and critically evaluating research) and capacity skills (such as conducting research). By including this potential distinction in data collection and analysis in this study, the issue is explored with greater clarity and may inform future research directions.

To answer the research questions of how confident are MTAS members in their skills and abilities to find, critically evaluate, and apply research in their work and how confident are MTAS members' in their skills and abilities to conduct research, participants' appraised self-efficacy in research literacy and capacity were tabulated as reflected by their reported knowledge of and experience with various research literacy and capacity activities or tasks pertaining to finding, critically appraising published research and designing and conducting research studies. Respondents were asked to indicate on a 4 point Likert scale from "know nothing, and have no practical experience" "know some theory, but have no practical experience", "know some theory and have practical experience, but have not mastered", and "know quite a bit, would not need assistance" what best describes your knowledge and skill level.

Previously published research included investigation of MTs' skills in reading, appraising, and designing research (40). This study collected data and performed analysis on reading and appraising quantitative research (with an example of randomized controlled trials offered) as well as reading and appraising qualitative research (with an example of clinical case reports offered). Providing this distinction by type of research adds to the information available regarding MTs self-appraised skill.

To answer the question of what individual factors (personal and professional) are associated with Saskatchewan R.M.Ts self-appraised efficacy in research literacy and capacity univariate analysis explored the association between several indicators of research literacy and capacity and the same participants' characteristics as used to explore association with research perceptions.

The following statements considered important indicators of knowledge and skill level in research literacy and capacity where the scope of responses was diverse were further explored in relation to respondents' characteristics:

- 1) Conducting a literature search
- 2) Reading and critically appraising quantitative research (such as randomized controlled trials)
- 3) Reading and critically appraising qualitative research (such as clinical case reports)
- 4) Designing and conducting quantitative research studies such as randomized controlled trials, or clinical trials
- 5) Producing qualitative research such as writing clinical case reports

Raw data from the question pertaining to knowledge and experience in research literacy and capacity were transformed to create new variables of "know nothing, and have no practical experience/know some theory, but have no practical experience" and "know some theory and have practical experience, but have not mastered/know quite a bit, would not need assistance" for each of the skills assessed.

To better understand the nature of research utilization (Objective 2)

To answer the research question to what extent, and how do MTAS members currently utilize research findings in their work, descriptive statistics (frequency distributions) were used to assess the frequency of types of use, (applying research in practice, seeking finding for problems, discussing findings, or using research findings to change policies). Respondents were asked to indicate on a 4 point Likert scale from never to always what best describes their use of research in practice in each of these types of use. A checkbox was provided for a N/A response. As there were few responses of “Never” and “Rarely”, these responses were combined in the descriptive analysis and the few responses of N/A recoded and included with the “No Answer”.

Frequency procedures were also executed to describe participants’ reference to research-based resources (websites, textbooks, online databases, peer-reviewed journals, and other publications). Participants were asked to indicate on a scale from never have; within the last year; within the last month; or within the last week, “When was the last time you referred to the following resources for research-based information related to your work?” A checkbox was provided for N/A as a response. For analysis the data was transformed to create a new variable coding of “Have Used” (“within the last year”; “within the last month”; or “within the last week”) and “Have Never Used” (“Never have”). The N/A response was recoded to be included with the “No answer” and therefore removed from the analysis.

The frequency of overall research utilization was assessed on two forms of a question regarding research use to capture both lived and espoused values. Respondents were asked to indicate on a 4 point Likert scale from never have; within the last year; within the last month, or within the last week, “When was the last time you utilized research in your work as a Registered Massage Therapist?” Respondents were also asked to indicate on a 4 point Likert scale from never; rarely; sometimes; or always “Overall, in the past year, how often have you utilized research in some aspect of your work as a Registered Massage Therapist” .

Two-way analysis comparing the responses on these two questions revealed high consistency (81%) between the “never” and “never have”. Of those who responded “within the last year” to

the first form of the question, ½ reported “rarely” and ½ reported “sometimes” in response to the second form of the question. Of those who responded “within the last month” to the first form of the question, most (86%) reported “sometimes” in response to the other question form. Of those who responded “within the last week” to the “when” form of the question, ½ responded “sometimes” and ½ responded “always” to the “how often” form. As responses were considered to be sufficiently consistent between the two forms of framing the question, univariate analysis was used to further explore association between the second form of the research utilization question and practitioner and practice characteristics. A new variable, “never/rarely” or “sometimes/always” was created for cross-tabulations used to assess association between overall research utilization and the demographic and practice characteristics of the respondents.

To answer the research question of what are the sources of practice knowledge that Saskatchewan RMTs use in their work frequency procedures were executed to describe participant responses on a 4 point Likert scale of “never”, “rarely”, “sometimes” or “always” to the question “The knowledge that I use in my practice is based on...” for a variety of information sources.

To identify what practitioner characteristics are associated with research utilization (Objective 3)

The following definition of overall research utilization, adapted from the Research Utilization Survey (52) was provided for survey participants to facilitate common interpretation: The use of any kind of research finding (massage therapy or non-massage therapy), in any kind of way, in any aspect of your work as a Massage Therapist.

To answer the research question of what individual factors (personal and professional) influence Saskatchewan RMTs utilization or non-utilization of research, multivariate analysis was necessary to explore the association between respondents’ personal and professional characteristics and overall research utilization taking into account the other variables in the model. Logistic regression analysis was used to explore what variables, if any, predict RU or non-utilization as reflected by responses to the question, “overall, in the past year, how often have you used research in some aspect of your Massage Therapy practice”: “never/rarely” or “sometimes/always”. Odds ratios of “sometimes/always” utilizing research were estimated to

assess the strength of the association between the outcome (overall research utilization) and important practitioner characteristics, research perceptions, and related behaviours.

The sample for the logistic regression analysis consisted of 253 cases.

New variables were created regarding respondents reported reference to types of research-based resources (peer-reviewed journals, PubMed or Medline, Massage Therapy Association publications) by recoding as “never have used” and “have used” from the responses of “never have”, “within the last year”, “within the last month” and “within the last week” in response to the question “when was the last time you referred to the following resources for research-based information related to your work” (See Table 1 below). Transformation of the other variables tested in the model has been described previously.

All variables for which the univariate test of association with the outcome resulted in a p-value <0.25 were considered as candidates for the multivariate model. Age and sex were also included as they were considered potentially important in the utilization or non-utilization of research in MT practice (see Table 1 below). However, three way analysis of research utilization by belief that MT practice should be informed by research and all other covariates in the model revealed evidence of zero cases in some cells, a violation of assumption in logistic regression analysis and as a result this variable was removed as a candidate for the model building. The assumption of independence was met and multicollinearity diagnostic tests (tolerance and variance inflation factor) were performed to examine whether one or more of the independent variables were highly correlated.

As there was no theoretical ground upon which to base a decision on what variables to examine for interaction, interaction terms were introduced containing each of the significant predictor variable in the main effects model to determine whether the relationship between any of the variables and research utilization varied by level of additional independent variables.

Table 1. Coding of covariates entered into the logistic regression model

Independent Variable	Code	P
Sex	0 = Male 1 = Female	0.51
Age	0 = 40 and under 1 = over 40	0.77
Belief that MT practice should be research-based	0 = overall disagree 1 = overall agree	<.001
Reference to peer-review journals (e.g. Journal of Alternative and Complementary Medicine, International Journal of Therapeutic Massage & Bodywork)	0 = have never referred to 1 = have referred to	<.001
Reference to PubMed/Medline/CAM on PubMed/other online research databases	0 = have never referred to 1 = have referred to	<.001
MT Association publications (Research Reports)	0 = have never referred to 1 = have referred to	0.003
Year received MT diploma	0 = in the last 10 years 1 = more that 10 years ago	0.01
Practice orientation	0 = other orientation 1 = treatment of musculoskeletal complaints	0.14
Research experience	0 = has never participated in research 1 = has participated in at least one project	0.07
Number of practice hours per week	0 = 20 hours per week or less 1 = more than 20 hours per week	0.005
Has completed a research literacy or methods course	0 = No 1 = Yes	0.005
Willingness to change beliefs or practice when research contradicts massage school learning	0 = never/rarely/sometimes willing 1 = always willing	0.02
Willingness to change beliefs or practices when research contradicts practice experience	0 = never/rarely/sometimes willing 1 = always willing	0.008
Conducting a literature search	0 = know nothing, and have no practical experience/know some theory, but have no practical experience 1 = know some theory and have practical experience, but have not mastered/know quite a bit, would not need assistance	0.01

Independent Variable	Code	P
Reading and critically appraising quantitative research (such as randomized controlled trials)	0 = know nothing, and have no practical experience/know some theory, but have no practical experience 1 = know some theory and have practical experience, but have not mastered/know quite a bit, would not need assistance	0.04
Reading and appraising qualitative research (such as clinical case reports)	0 = know nothing, and have no practical experience/know some theory, but have no practical experience 1 = know some theory and have practical experience, but have not mastered/know quite a bit, would not need assistance	0.002

^a reference category for the independent variables is first

As this study is somewhat, but not wholly exploratory in nature, two main procedural methods were used in the logistic regression modelling analysis. For the purpose of comparison with previously published research exploring predictors of application of research findings in MTs' and chiropractors' clinical practice a forward stepwise conditional approach was used. Using this method, variables are added 1 at a time until the remaining variables fail to reach a significance level greater than 0.05.

However, as Field (2009) cautions that stepwise procedural methods in logistic regression may be appropriate only for purely exploratory model building, a decision was made to also use the Enter method (54). This method allows for the purposeful selection of variables taking into account findings from previously published research in health care providers' research utilization. In the enter method, all of the predictor variables are placed into the regression model in one block, and parameter estimates are calculated for each block.

The importance of each variable included in the model was verified by examination of the Wald statistic for each variable and an examination of the LRT (likelihood ratio test) as well as by comparison of each estimated coefficient as each variable was removed from the model as compared to the full model.

3.5.0 Qualitative Methods

3.5.1 Development of Interview Schedule

An interview schedule was developed to facilitate the collection of data following a critical incident format. The critical incident technique has been used in several studies regarding health care providers practice experiences (55-58). Using the framework of the critical incident technique allows opportunity for health care providers to tell about real world situations in their work relevant to the topic of study. When guided by a skilled interviewer to articulate the purpose and consequences of their actions this tool is an effective way for “turning anecdotes into data” by using inductive analysis of the incidents related by the storytellers (58).

I conducted three practice interviews with RMTs known to me personally. Three experts then listened to a taped pilot interview and provided feedback. Initially, in introducing the purpose of the interviews to the practice interview participants I provided them with the definition of research used in the survey. Feedback from the expert elicitation included the recommendation to revise the approach by eliminating the definition of research to allow for more exploratory data collection. (See interview schedule attached in Appendix E).

The respondents were asked to “please tell me about a specific event or situation that influenced the way you feel about research in your work as an RMT”. Further prompts helped to focus a response regarding what lead up to the specific event, what the practitioner felt at the time and what resulted from or was the consequence of the particular event. This method facilitated the collection of data relevant to practitioners stated successes and challenges in utilizing research, an approach not yet used to explore MTs reported experiences with research in their work. Participants were invited to share one or more incidents. A final question “is research important” was used to solicit further in depth information about practitioners perceptions about research. In addition, participants were asked about their interpretation of the terms “research-based” and “research-informed” as an attempt to clarify inconsistencies revealed analysis of the survey data.

3.5.2 Sample & Procedures

Six members of the MTAS served as cases. Survey questionnaires were selected by the researcher to represent a broad range of questionnaire responses pertaining to respondent perception of research as indicated by agreement or disagreement that MT practice should be based on research and the extent of their self-reported research utilization. This initial selection was then reduced to 18 study identification numbers that included a similar distribution of sex, age, and number of years of practice experience as the sample of survey respondents. A letter of invitation (attached in Appendix C) to participate in a one-time interview was sent from the MTAS office to these potential participants identified by the corresponding study ID. Three of the selected potential participants responded to the invitation by returning the reply form or emailing the researcher that they would be willing to participate in an interview. As this number was deemed insufficient to meet the purpose of the study, another 20 surveys were selected by the same process and these 20 potential participants were invited by mail to participate. Four MTAS members responded affirmatively and one was unable to participate at the time of data collection.

I contacted all potential participants with an offer to answer any questions about the study and then interviews were scheduled for a mutually agreed upon place and time or by telephone. Prior to the interview written consent was obtained from the participants (consent form attached in Appendix D).

The semi-structured interviews lasted from approximately 30- 60 minutes. Two were conducted by telephone and four in person. All interviews were audio recorded. Five were transcribed verbatim by a hired transcriber and one by the researcher. All interview texts were checked by the researcher and corresponding audio tape for accuracy and completeness.

The preservation of all raw data in the form of interview transcripts and comments as well as a qualitative study log maintained by the researcher serve to address confirmability in this study. In order to solicit member checking, to assess my understanding, and to ensure credibility I summarized the main points of the interview throughout and at the end of each interview.

Triangulation to verify credibility has also been addressed by assessing the consistency of the data obtained in the interviews against the data obtained from the questionnaire, by using several cases as sources of data, and by comparing information gained in this study to that presented in the existing literature.

3.5.3 Case study analysis

Data categories were formed by grouping similar incidents together to establish groups of positive experiences (successes) and negative experiences (challenges). From these two groupings key factors and sub-categories were identified and labelled, a process consistent with other published literature (57). The data transcripts were reviewed by members of the Thesis Advisory Committee and agreement was obtained that the factors and categories adequately represented the interview data. Data extracts are reported as examples of the key factors and sub-categories that emerged from the analysis.

3.5.4 Ethical Considerations

An ethic of caring dictates that the object of research is the problem of interest and not the research participants themselves (59). The obligation to treat information shared sensitively with an ethic of caring toward the participants willing to share has been an implicit value held in the conduct of this study. It is from this standpoint that I navigated through this research work by holding respect for the participants involved in this study in the forefront while committing to the values of honesty and integrity in the research process. As an RMT myself and therefore having collegueship with the research participants, I was especially mindful that questions asked in both the quantitative and qualitative phases of the study were respectful to the participants, their practices, and of the important contributions that participants made to this study. In addition, I was attentive to the truthful, careful, and respectful representation of the data gathered from all participants.

Confidentiality:

The MTs who responded to the survey questionnaire are anonymous to the investigator. A three-digit study identification number was assigned to each MTAS member and affixed to the survey

instrument and the return envelope to facilitate the mailing of reminders and for follow-up contact for the second phase of the study by the MTAS office staff. Participant questionnaire responses are only reported in aggregate form. Confidentiality of data obtained in the case study interviews is assured. Interview data are reported such that no individual's response is identifiable.

Consent:

Consent was implied by the return of the questionnaire as outlined in the cover letter that accompanied the questionnaire and additional information was provided to participants on the first page of the survey instrument. The cover letter and survey instrument are contained in the Appendices A & B. Written consent was obtained from participants selected for the qualitative interviews. The letter of invitation to potential interview participants is included in Appendix C and the written consent form is included in Appendix D.

Data storage:

Completed surveys were mailed to Dr. Anne Leis at the Department of Community Health & Epidemiology. Upon completion of the analysis, all data (completed questionnaires and interview transcripts) will be kept in a secure locked area in the office of Dr. Anne Leis at the Department of Community Health & Epidemiology for a period of five years and then destroyed beyond recovery.

4.0 RESULTS

4.1 Findings of the quantitative analysis

4.1.1 Response rate

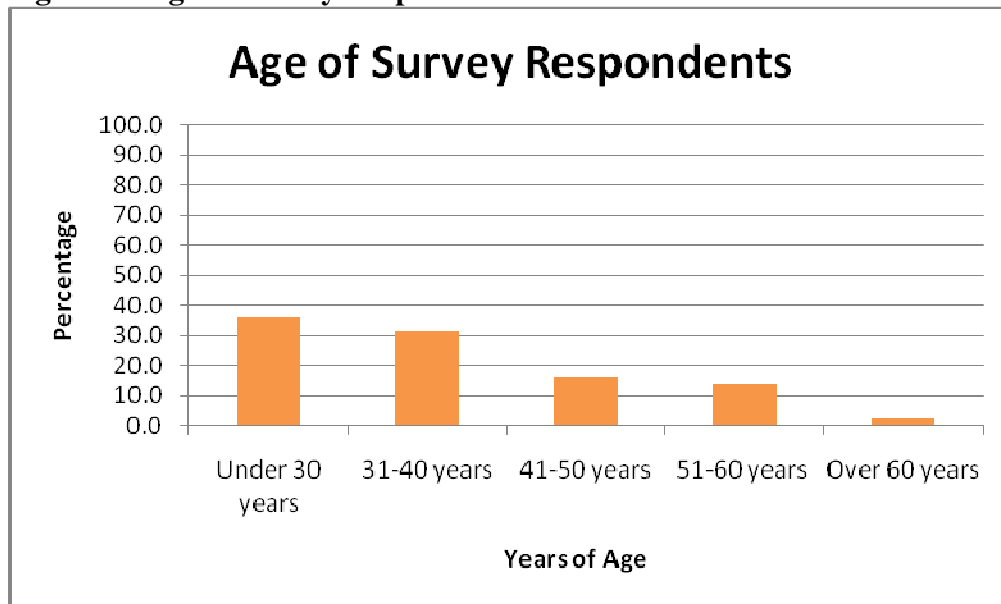
Of the 815 surveys mailed to MTAS members, a total of 333 questionnaires were completed and returned, for a response rate of 40.9%.

4.1.2 Demographics

4.1.2.1 Age

Figure 1 shows the percentage distribution of the survey respondents' age across five age groups. The largest group is those under 30 years of age (36%). Most of the respondents (68%) were 40 years of age or under.

Figure 1. Age of Survey Respondents



4.1.2.2 Sex

Most (87%) of the respondents were female.

4.1.2.3 Number of years in practice and year of graduation from MT training program

Figure 2 shows the percentage distribution of the number of years in practice reported by the survey respondents. Frequency analysis revealed that the number of years in practice ranged from new graduates to 40 years of practice with a mean of 8.5 years (SD=6.328).

Figure 2. Survey respondents' reported years in MT practice.

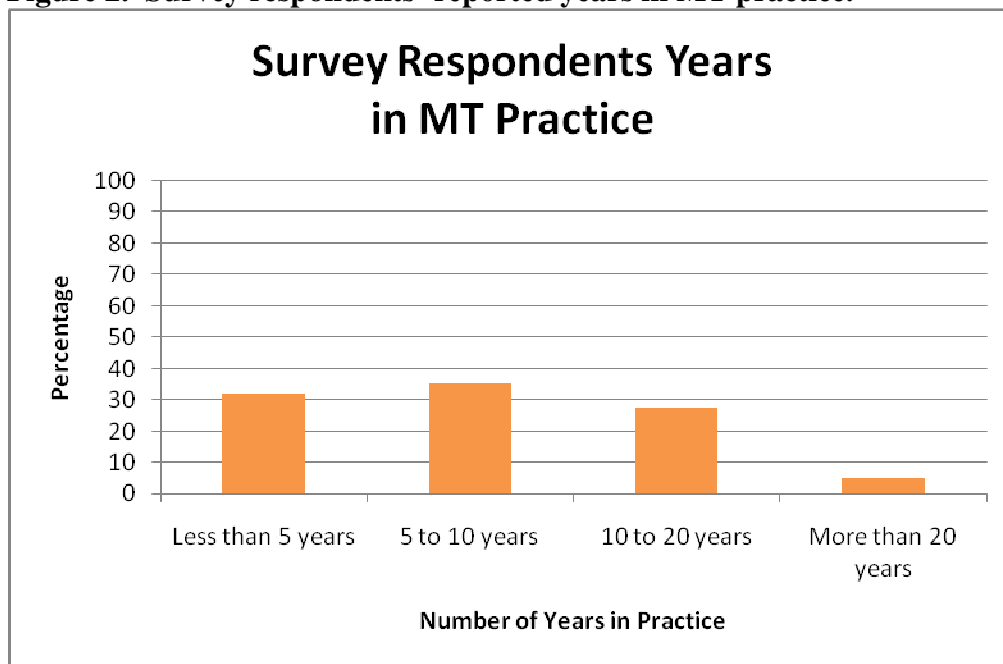
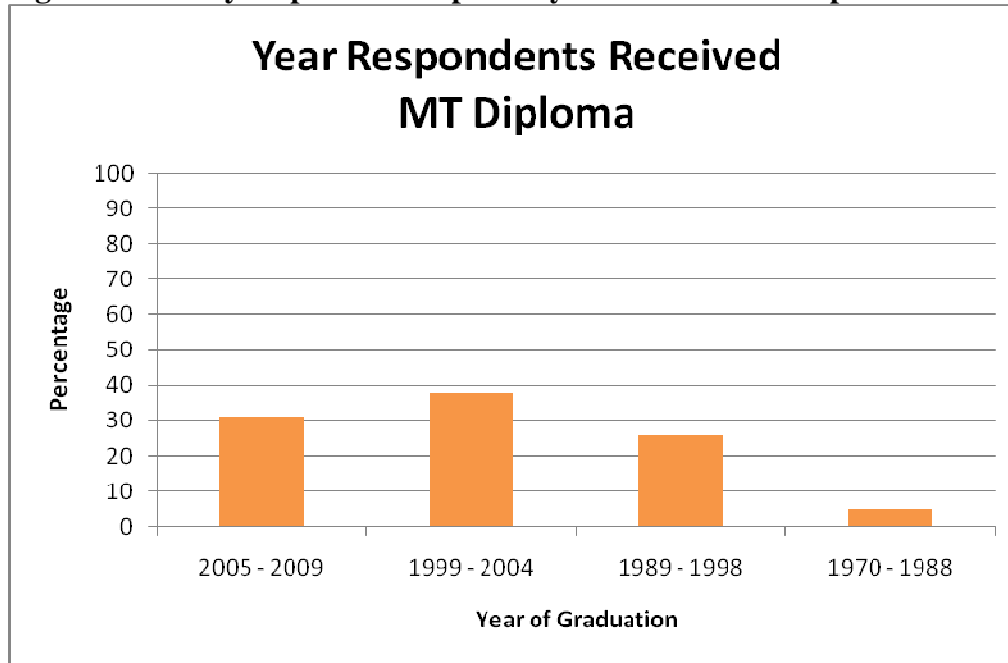


Figure 3 shows the distribution of the year in which respondents' received their MT education and training. Approximately one-third (31%) of the respondents received their diploma less than 5 years prior to the survey. The majority (61%) of respondents graduated within the last 10 years.

Figure 3. Survey respondents reported year in which MT diploma was received.

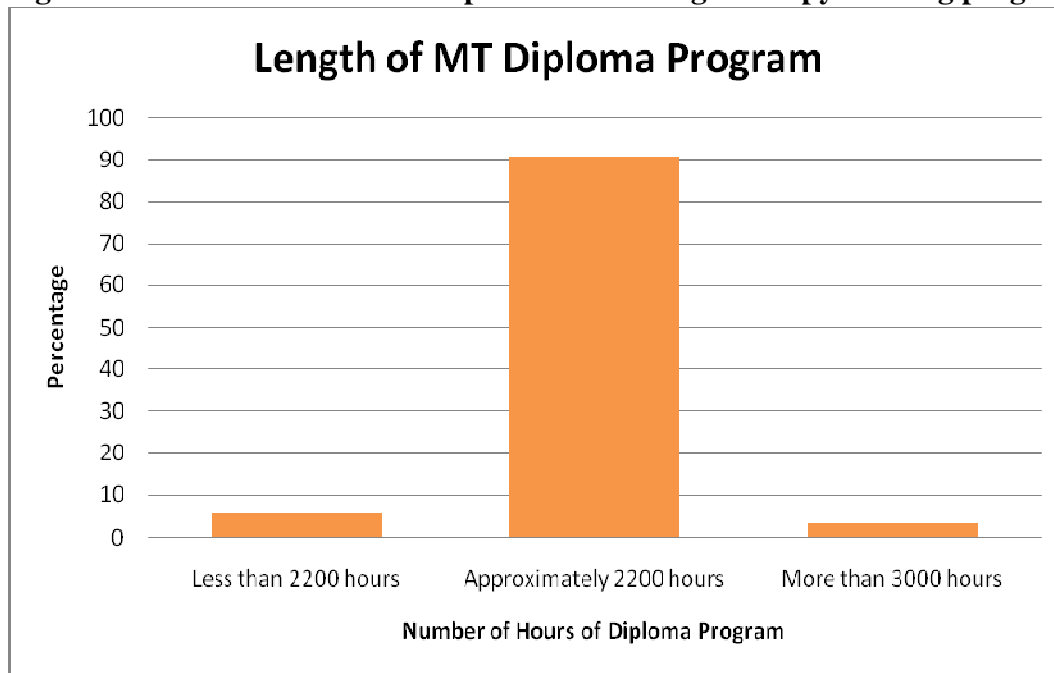


A comparison of reported year of graduation and number of years of practice experience revealed that 21 respondents (6%) report having graduated more than 10 years ago but having 10 years or less of practice experience. Two respondents report graduating in the last 10 years but having more than 10 years of practice experience.

4.1.2.4 Number of hours of MT diploma program

Figure 4 shows the percentage distribution of reported length (in program hours) of the MT diploma program attended by the survey respondents. The majority reported having attended a MT training and education program of approximately 2200 hours of instruction with less than 10% reporting attending programs of shorter or longer duration.

Figure 4. Number of hours of respondents' massage therapy training program.



4.1.2.5 Highest completed level of education:

Diploma was the highest level of education reported by most (87%) of the respondents. In addition to Diploma, 24 respondents (7%) had a Bachelor's Degree and one respondent held a doctorate degree. Responses of "other" included some University, certificates, and diploma training in other health care areas.

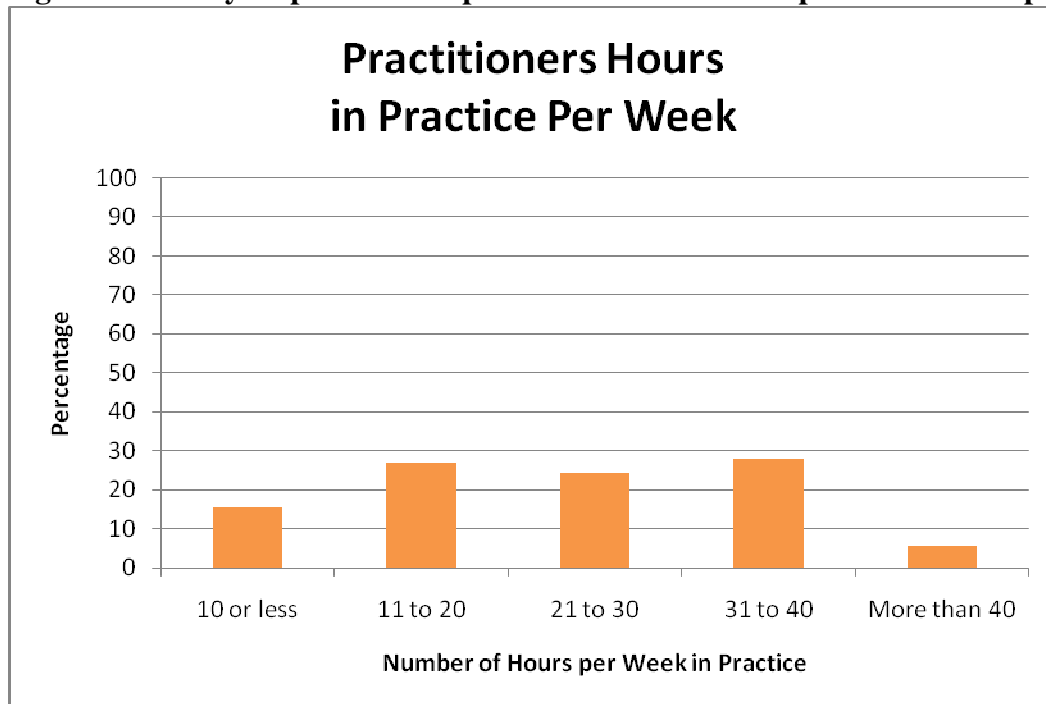
4.1.2.6 Current enrolment in post-secondary education programs

Twenty-two respondents (7%) reported being currently enrolled in a post-secondary program. Of these, 9 (2.7%) were enrolled in a diploma program and 9 (2.7%) were enrolled in a Bachelor's degree program. Four respondents reported enrolment in correspondence classes and certificates.

4.1.2.7 Number of practice hours per week

Figure 5 shows the percentage distribution of the number of hours per week that respondents report working. The majority (58%) work more than 20 hours per week in their MT practice.

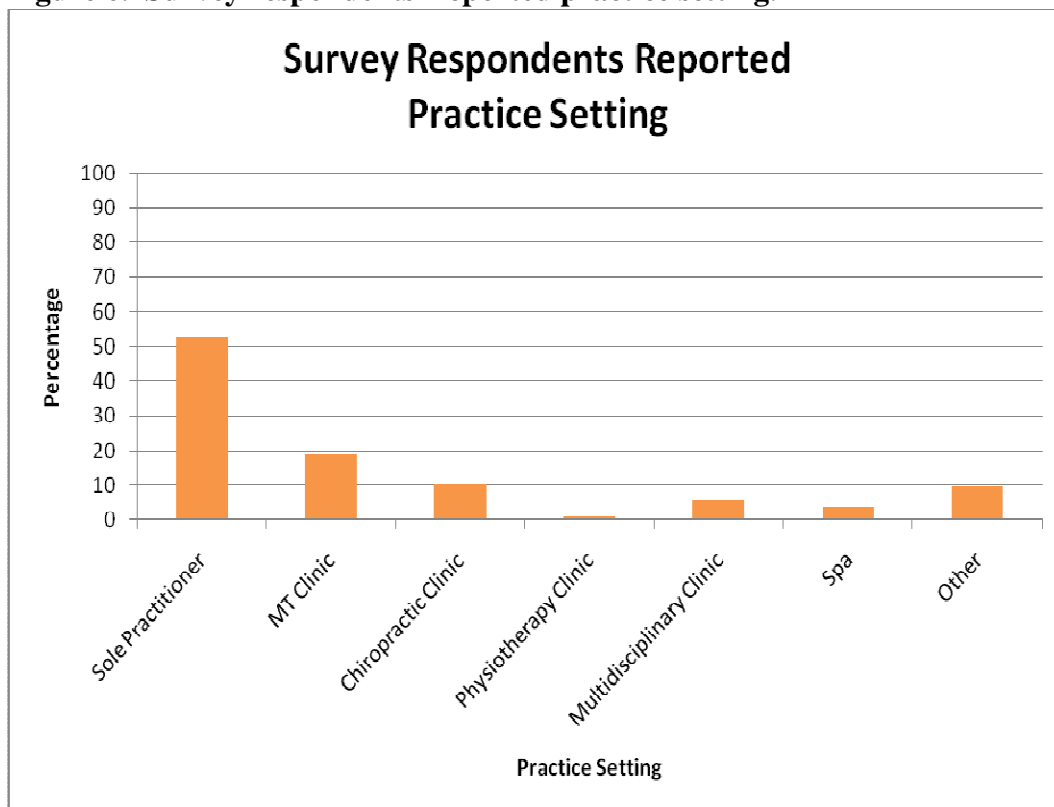
Figure 5. Survey respondents' reported number of hours per week in MT practice.



4.1.2.8 Practice Setting

Figure 6 shows the percentage distribution of respondents' selected practice setting. Slightly more than half (52%) of respondents were sole practitioners. Only 13 (4%) worked in a Spa setting. Fewer than 10% chose "other" and described either working at least part-time in clinic environments, or in medical offices, fitness facilities, or reported that they are currently not practicing.

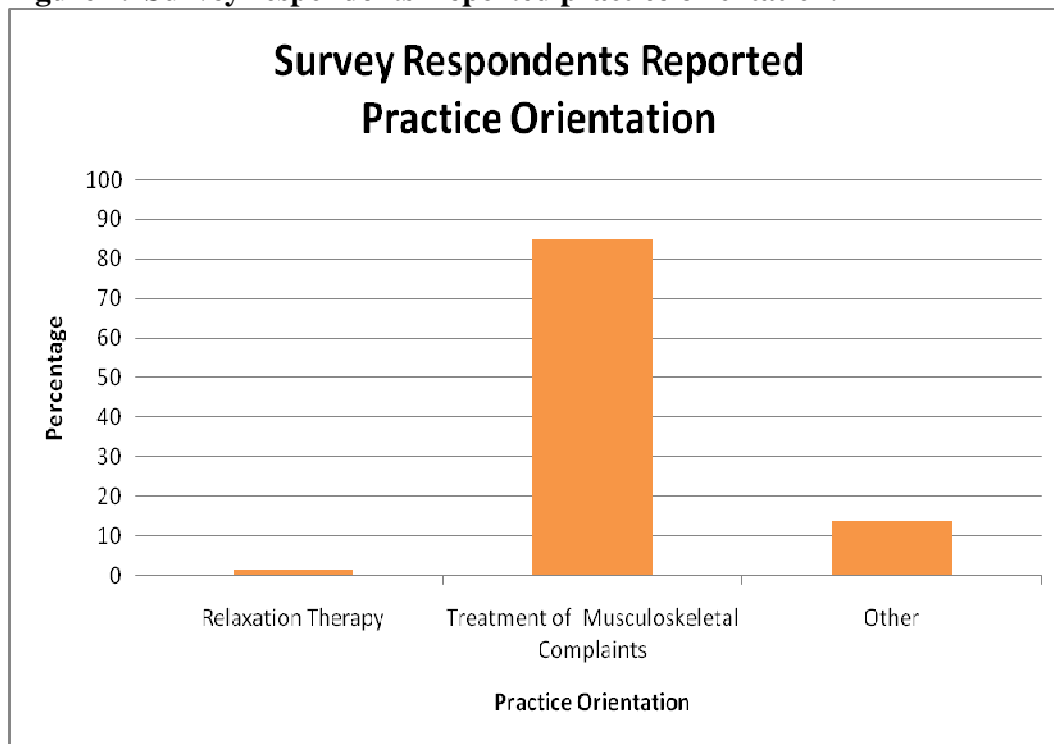
Figure 6. Survey respondents' reported practice setting.



4.1.2.9 Practice Orientation

Figure 7 shows the percentage distribution of respondents selected practice orientation. Treatment of musculoskeletal complaints was the practice orientation selected by 85% of respondents with only 5 (2%) selecting relaxation therapy. More than half of the 45 respondents that choose “other” to best describe their practice reported both relaxation and treatment of musculoskeletal complaints as their practice orientation. The remainder of the respondents choosing “other” listed craniosacral therapy, pregnancy, sports massage, lymphatic drainage, pediatrics and neurodevelopment, either alone or in combination with treatment of musculoskeletal complaints.

Figure 7. Survey respondents' reported practice orientation.



4.1.2.10 Research Experience

Most respondents (79%) have never participated in a Massage Therapy research project. Of those who have participated in MT research, 10% selected clinical case report as the type of research, 4% selected practice audit, 2% selected survey research, 4% clinical trial or RCT, 2% evaluation research, 2% qualitative research. No respondents reported involvement in systematic review. The remaining 6% who reported having participated in research were either uncertain of its type or described thesis research projects or papers done as part of MT school requirements.

4.1.2.11 Research Education

Only 71 respondents (22%) report having completed a research literacy or methods course. Of those who had, 13% describe their course as mandatory in massage school, 2% as optional in massage school, 2% as a non-massage college course, 5% as a University degree course, 3% as a continuing education course, 1% as an online course. The remaining 3% selecting "other" described courses through high school or other health sciences programs.

4.1.3 Perception of Research: Results presented here serve to answer the first of the two main research questions – “How do members of the MTAS perceive the role of research in their work” and to meet the study objective of describing these perceptions.

4.1.3.1 Research perception as indicated by beliefs about research

Few respondents held strongly negative perceptions about research (Table 2). Up to 10% of practitioners in the sample were not clear about their beliefs regarding research as indicated by a response of “don’t know” when asked what best represents their belief. Greater than 90% of respondents believe that research adds credibility to the MT discipline, leads to improved client/patient care, and helps evaluate exiting treatments. While 88% of the respondents overall agree that MT practice should be informed by research, fewer (58%) overall agree that MT practice should be based on research. Approximately one-half of the respondents (51%) agree that research capacity education should be mandatory in MT education while approximately two-thirds (66%) agree that research literacy should be a mandatory component of MT education.

Table 2. Number of survey participants and (percentage) at each level of agreement regarding statements of belief about research.

Perception Statements	Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know
Research adds credibility to my discipline	3 (0.9)	1 (0.3)	115 (34)	207 (63)	5 (2)
Research leads to improved client/patient care in my discipline	4 (1)	9 (3)	147 (45)	163 (49)	7 (2)
Research helps evaluate existing treatments in my discipline	2 (0.6)	12 (4)	214 (65)	93 (28)	10 (3)
Massage Therapy practice should be informed by research	1 (0.3)	16 (5)	196 (59)	94 (28)	24 (7)
Education in finding, critically evaluating and applying research should be a mandatory component of training	6 (2)	78 (24)	162 (49)	57 (17)	29 (9)
Massage Therapy practice should be based on research	18 (6)	92 (28)	149 (45)	41 (13)	29 (9)
Education in conducting research should be a mandatory component of training in my discipline	13 (4)	120 (36)	135 (41)	33 (10)	32 (10)

^a Respondents were asked what best represents their belief.

^b Percentage of sample presented in parentheses.

4.1.3.2 Research perception as indicated by belief suspension:

Few respondents were never or rarely willing to change beliefs or practice when research contradicts information obtained prior to or in massage school or from practice experience (Table 3). When considering information learned prior to massage school that is contradicted by research, most respondents (60%) reported being always willing to change their beliefs or practices. Fewer respondents, (37%) reported being always willing to change beliefs or practice when information learned in massage school is contradicted by research. Less than a third (29%) report being always willing to change beliefs or practice when research contradicts practice experience.

Table 3. Number of survey participants and (percentage) responding to the question: “How willing are you to change your beliefs or practices when information from research contradicts something you.....”

Willingness Statements	Never Willing	Rarely Willing	Sometimes Willing	Always Willing
Learned Prior to Massage School	0	6 (2)	124 (38)	193 (60)
Learned in Massage School	0	8 (2)	198 (60)	123 (37)
Learned in Practice Experience	1 (0.3)	25 (8)	208 (63)	95 (29)

4.1.3.3 Research perception by provider and practice characteristics: Results presented here serve to answer the research question – “What individual factors (personal and professional) are associated with Saskatchewan RMTs perceptions of research”.

No association with any of the indicators of research perception (belief that MT practice should be research-based, belief that MT practice should be informed by research, belief that research literacy education should be mandatory in MT training, belief that research capacity education should be mandatory in MT training, belief suspension or willingness to change beliefs or practice when information from research contradicts something learned prior to or in massage school or from practice experience) was found for respondents’ sex, years since graduation from massage school, number of years in practice, whether they have post-secondary education other than their MT diploma, the setting in which they practice (sole practitioner, clinic, or spa,) or their practice orientation (treatment of musculoskeletal injuries, relaxation therapy, or other).

However, the belief that MT practice should be based on research was significantly associated with the number of practice hours per week reported by practitioners ($p = 0.002$). A greater percentage of those working fewer hours per week agreed that MT practice should be research-based (Table 4). The belief that MT practice should be research-informed was significantly associated with participants reporting research experience ($p=.03$). A greater percentage of those without experience participating in research agreed that MT practice should be informed by research (Table 4). The belief that research capacity education should be mandatory in MT training was significantly associated with reported level of research education ($p=.03$). A greater percentage of those who had taken a research literacy or methods course agreed that education in designing and conducting research should be a mandatory component of MT training (Table 4).

Table 4 Survey respondents' perceptions of research by practitioner characteristics (% that agreed or strongly agreed with statements of belief).

Belief	Characteristic		P
MT Practice Should Be Based on Research	Practice 20 or less hours per week (N = 117)	Practice more than 20 hours per week (N = 177)	
	74	57	.002
MT Practice Should Be Informed by Research	No Research Experience (N = 238)	Have Participated in Research (N = 62)	
	96	89	.03
Research Capacity Education Should be Mandatory	No Research Education (N = 229)	Have Taken A Research Course (N = 67)	
	52	67	.03

Figure 8 demonstrates the findings from univariate analysis of an association between willingness to suspend belief (change belief or practice) when research contradicts something learned in massage school and the number of years respondents have been in practice when responses of “never/rarely/sometimes” were compared to “always” ($p=.04$). A greater percentage of those with more than 10 years of practice experience reported being always willing to change belief or practice.

Figure 8. A comparison of participants willingness to suspend belief (change beliefs or practice) when research contradicts something learned in massage school by the number of years of practice experience (percentage “always willing”).

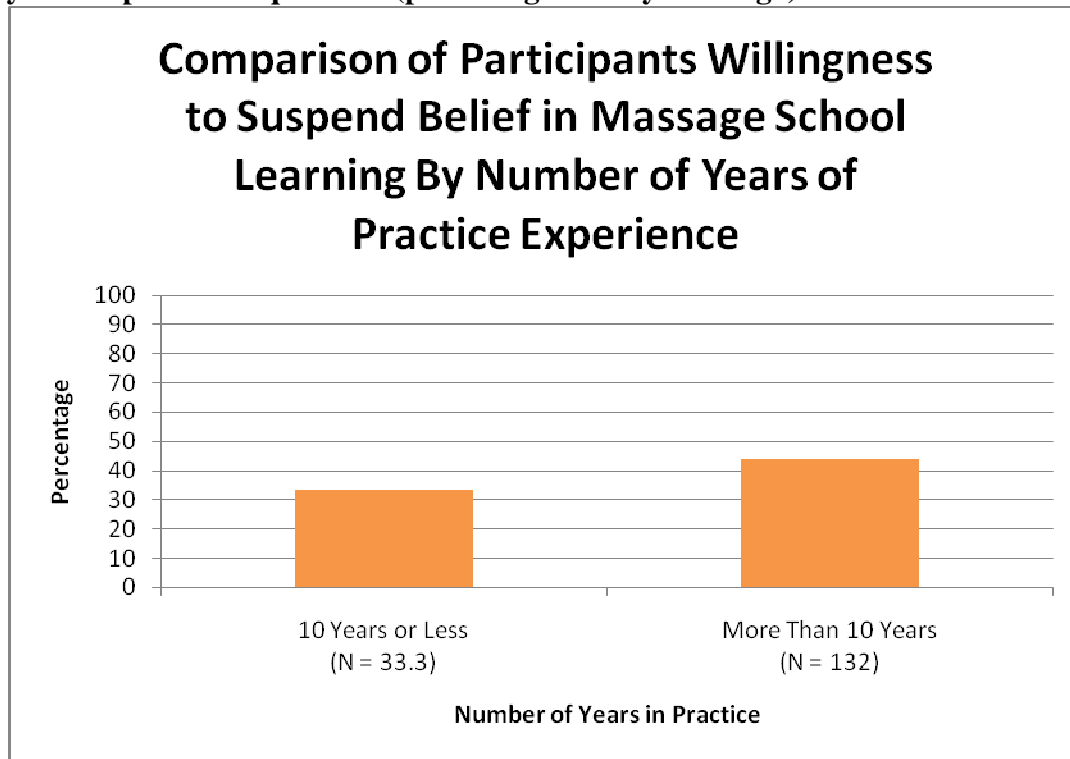
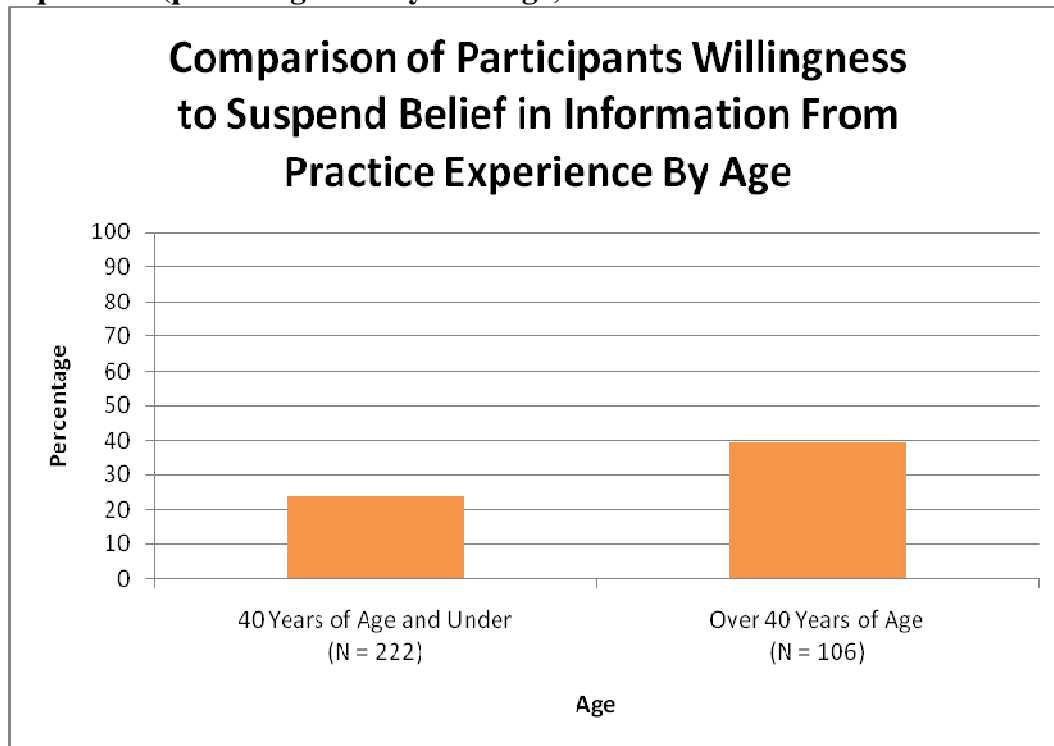


Figure 9 shows the finding that willingness to suspend belief when research contradicts something learned in practice experience was associated with the respondents' age ($p=.003$). A greater percentage of respondents over 40 years of age were willing to change their beliefs and practices.

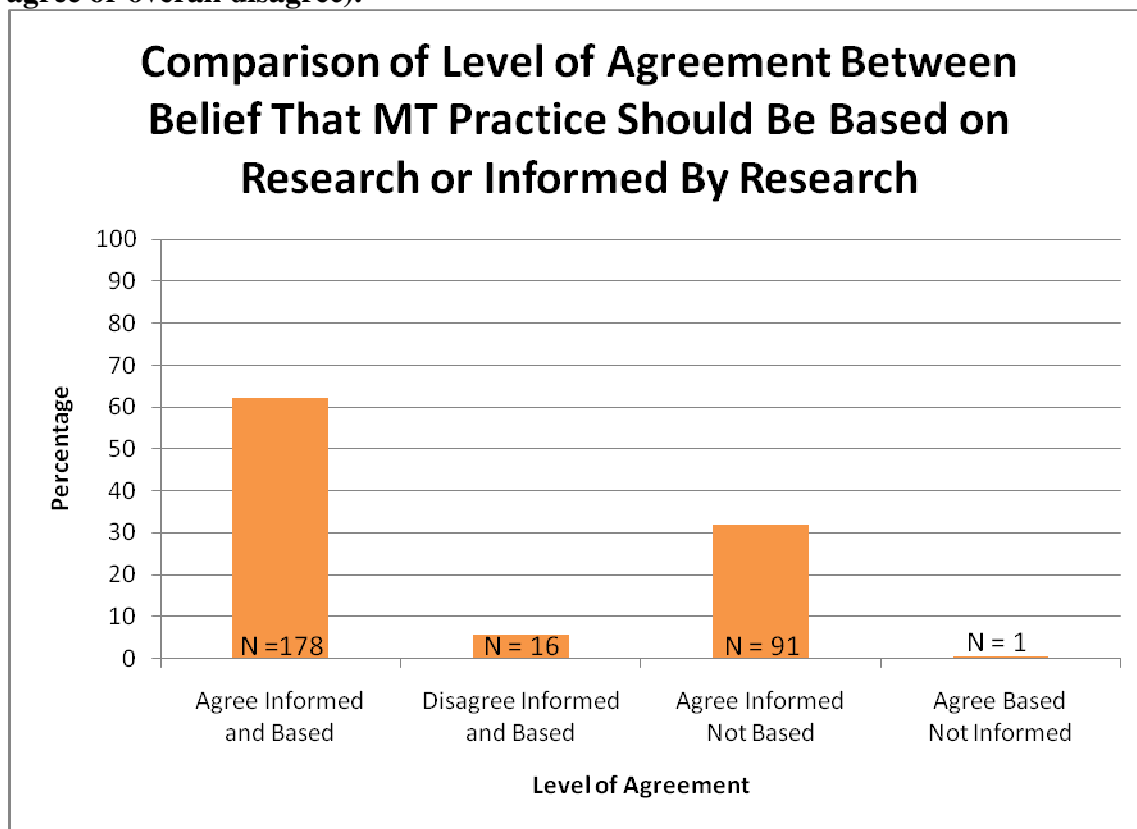
Figure 9. A comparison of participants willingness to suspend belief (change beliefs or practices) when information from research contradicts something learned in practice experience (percentage “always willing”).



4.1.3.4 Related statements of research perception

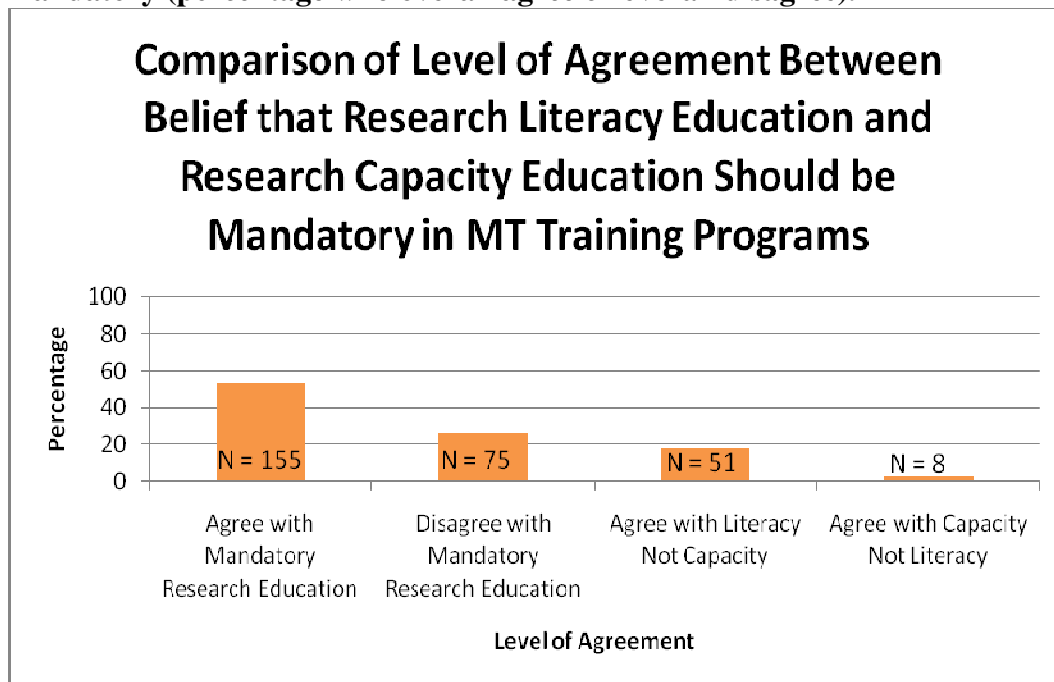
The majority of the survey participants were consistent in their agreement that MT practice should be based on and informed by research but those who were inconsistent in their beliefs were more likely to endorse research-informed practice than research-based practice (Figure 10). Although 7% of survey participants were not able to state a position regarding agreement or disagreement that MT practice should be informed by research and 9 % did not know whether or not MT practice should be based on research, for the purposes of comparing those with an opinion, the “don’t know” responses were recoded to be included with the “no Answer” and therefore removed from the analysis.

Figure 10. A comparison of respondents' level of agreement between two statements indicating research perception: the belief that MT practice should be based on research and the belief that MT practice should be informed by research (percentage that overall agree or overall disagree).



The majority of participants were consistent in their beliefs regarding whether or not research education should or should not be mandatory. While the majority agree with both statements, of the 20% who hold contrary opinions, most endorse education in finding and critically evaluating research but not conducting research (Figure 11). While 9% of respondents responded that they did not know what best represents their belief in mandatory research literacy education and almost 10% did not know what best represents their belief regarding mandatory research capacity education, for the purpose of comparing those who did hold an opinion, the response of “Don’t Know” were recoded to be included with the “No Answer” and therefore removed from the analysis.

Figure 11. A comparison of respondents' level of agreement between two statements indicating research perception: the belief that research literacy education should be mandatory in MT training and the belief that research capacity education should be mandatory (percentage who overall agree or overall disagree).



4.1.4 Research literacy skills: Results presented here serve to answer the research question – “How confident are MTAS member’s in their skills and abilities to find, critically evaluate, and apply research in their work” and to meet the objective of the study to describe MT’s appraised self-efficacy in research literacy.

Table 5 shows the respondents’ appraisal of their research literacy skills in all four possible categories of knowledge and experience. Most report some knowledge and experience in using the library. Only 1/3 of them report having experience in conducting a literature search. Respondents report more knowledge and experience in reading and critically evaluating qualitative research than quantitative research.

Table 5. Survey participants appraised self-efficacy in research literacy.

Research Literacy Skills	Know Nothing and Have no Practical Experience n(%)	Know some Theory but Have No Practical Experience n(%)	Know Some Theory and Have Practical Experience but have not mastered n(%)	Know quite a bit, would not need assistance n(%)
Using the library to find research information	37 (11)	91 (28)	156 (48)	44 (13)
Conducting a literature search	116 (36)	101 (31)	80 (25)	28 (9)
Reading and critically appraising quantitative research (such as randomized controlled trials)	177 (54)	100 (31)	44 (13)	7 (2)
Analyzing/interpreting data (example statistics)	133 (40)	117 (36)	67 (20)	12 (4)
Reading and appraising qualitative research (such as clinical case reports)	116 (36)	123 (38)	75 (23)	14 (4)
Identifying bias in research	193 (59)	99 (30)	32 (10)	5 (2)

4.1.5 Research Capacity Skills: Results presented here serve to answer the research question – “How confident are MTAS member’s in their skills and abilities to conduct research and to meet the study objective of describing MT’s appraised self-efficacy in research capacity.

Table 6 shows survey respondents’ appraised self-efficacy in research capacity skills. Producing qualitative research such as clinical case reports was the area of research capacity that respondents’ felt most confident in and less than 20% report having practical experience or not needing assistance in this area.

Table 6. Survey participants appraised self-efficacy in research capacity

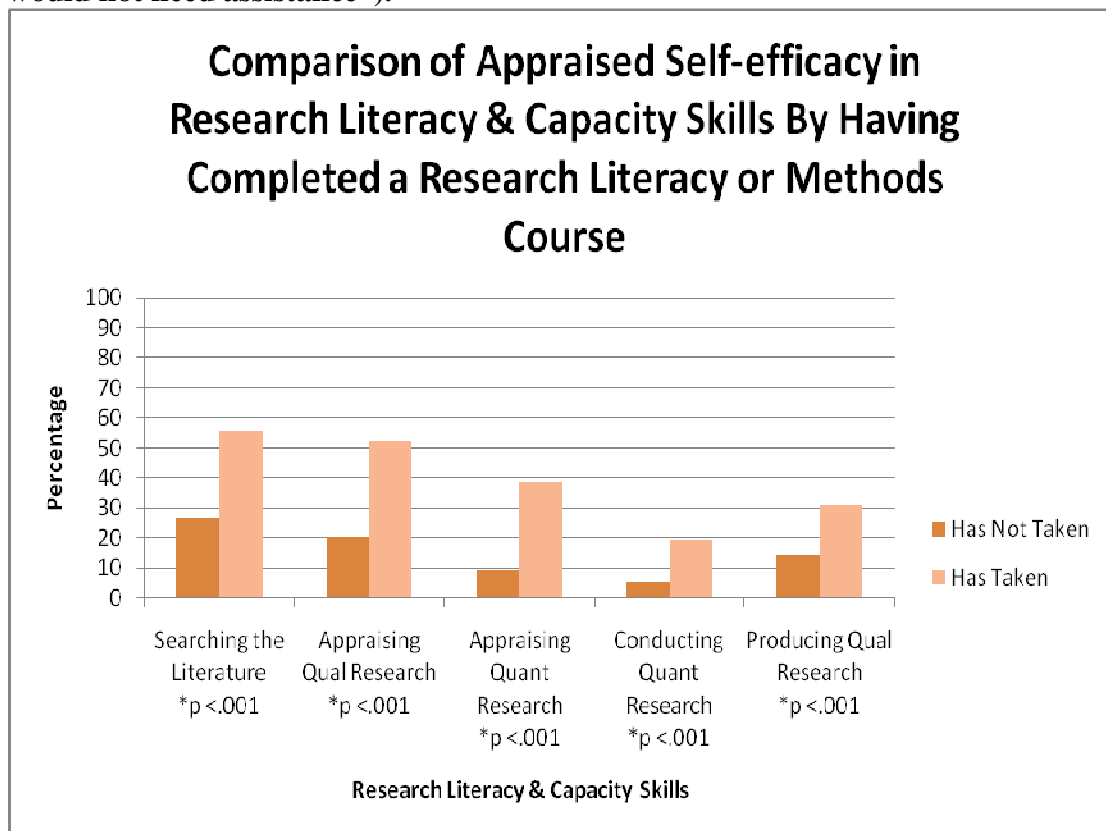
Research Capacity Skills	Know Nothing and Have no Practical Experience n(%)	Know some Theory but Have No Practical Experience n(%)	Know Some Theory and Have Practical Experience but have not mastered n(%)	Know quite a bit, would not need assistance n(%)
Designing and conducting quantitative research studies such as randomized controlled trials, or clinical trials	220 (67)	80 (24)	26 (8)	2 (0.6)
Designing and conducting quantitative research studies such as surveys	194 (59)	96 (29)	35 (11)	3 (0.9)
Producing qualitative research such as writing clinical case reports	186 (57)	82 (25)	54 (17)	5 (2)
Writing research grant proposals	290 (88)	33 (10)	6 (2)	0
Gaining research ethics approval and consent	280 (85)	38 (12)	9 (3)	1 (0.3)

4.1.5.1 Research literacy and capacity skills by provider and practice characteristics: results presented here serve to answer the research question – “What individual factors (personal and professional) are associated with Saskatchewan RMTs self-appraised efficacy in research literacy and capacity”.

There was no association between any of the indicators of efficacy in research literacy (conducting a literature search, reading and critically appraising quantitative research, reading and critically appraising qualitative research) or the indicators of efficacy in research capacity (designing and conducting quantitative research studies, and producing qualitative research) and practitioners’ age, whether they were sole practitioners or worked in clinics, or whether their practice focus was treatment based, relaxation based or other.

All five indicators of research literacy and capacity were significantly associated with having completed a research literacy or methods course (Figure 12). A greater percentage of those who had taken such a course reported having confidence and experience in conducting a literature search ($p<.001$), reading and critically appraising quantitative research ($p<.001$), reading and critically appraising qualitative research ($p<.001$), designing and conducting quantitative research ($p<.001$) and producing qualitative research ($p<.001$).

Figure 12. Survey respondents appraised self-efficacy in research literacy and capacity skills by having completed a research literacy or methods course. Percentage responding “know some theory and have practical experience, but have not mastered/know quite a bit, would not need assistance”).



Confidence and experience in all three areas of research literacy was significantly associated with having other post-secondary education as well as a MT diploma such as in literature searching ($p=.005$), appraising qualitative studies ($p=.003$), and appraising quantitative studies

($p < .001$). A greater percentage of those with additional education reported some knowledge and practical experience in research literacy (Figure 13).

Figure 13. Survey participants appraised self-efficacy in research literacy by highest level of education attained. Percentage responding “know some theory and have practical experience, but have not mastered/know quite a bit, would not need assistance”)

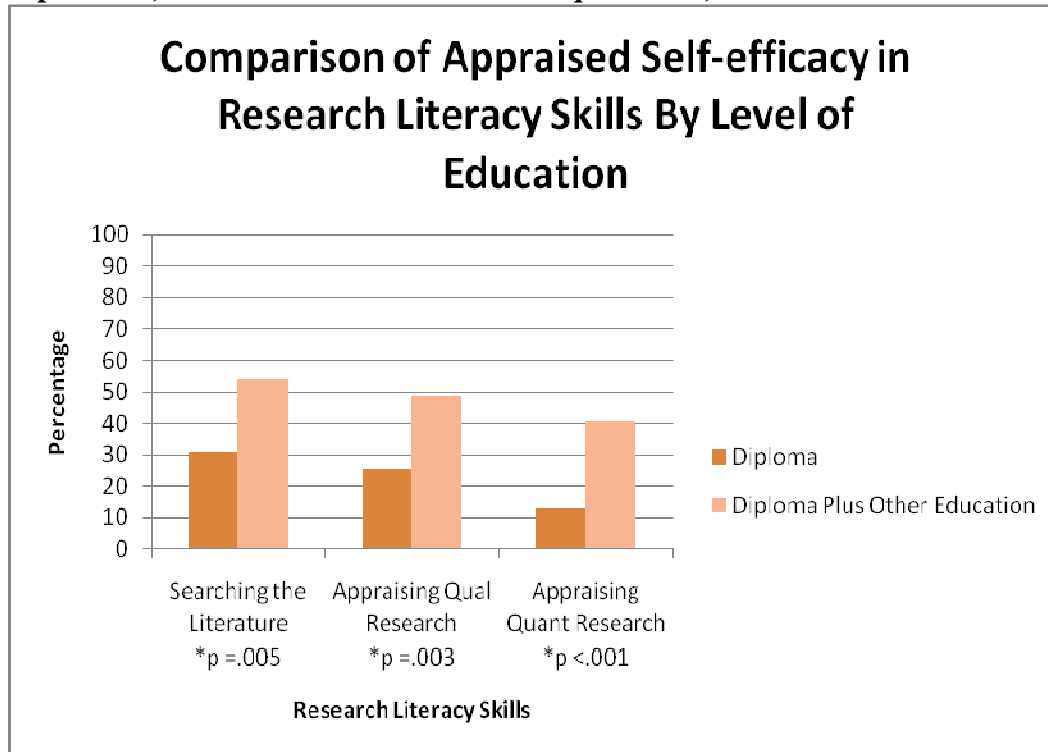


Figure 14 shows that self-efficacy in research capacity was significantly associated with having participated in one or more research studies. A greater percentage of those having participated in at least one MT research project had some knowledge and experience in conducting quantitative research ($p < .001$) and qualitative research ($p = .03$).

Figure 14. A comparison of respondents' appraised self-efficacy in conducting quantitative or qualitative research by having participated in at least one research project. Percentage responding "know some theory and have practical experience, but have not mastered/know quite a bit, would not need assistance")

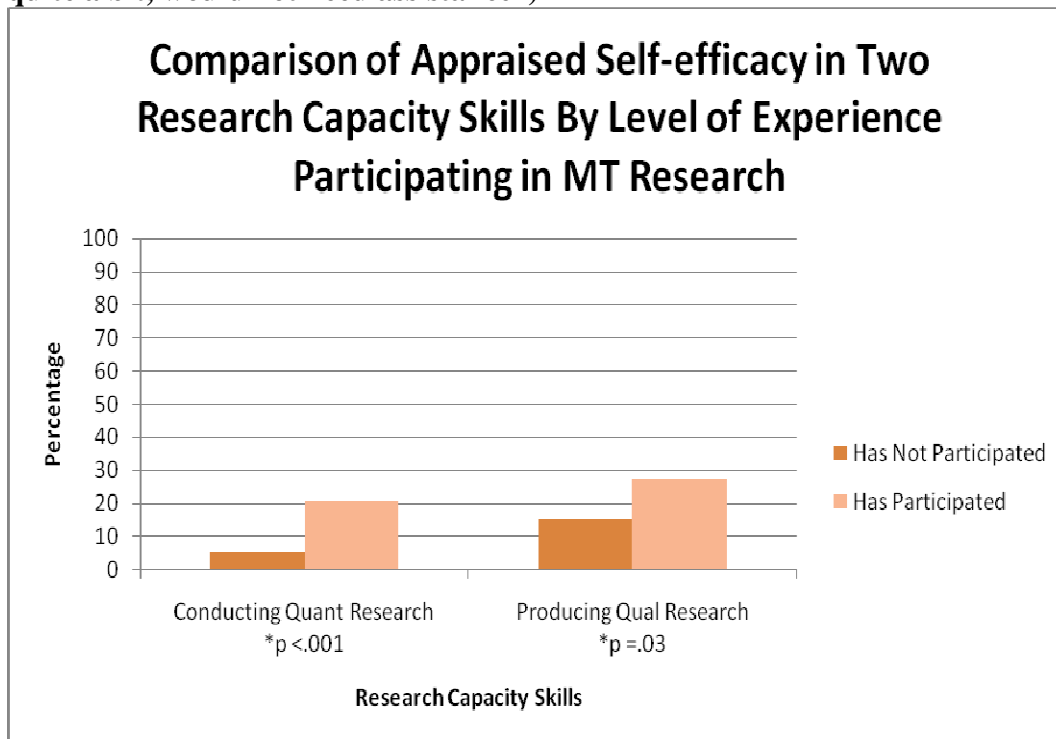


Figure 15 shows that confidence in searching the literature was significantly associated with the number of practice hours worked per week ($p=.02$) as was confidence in producing qualitative research ($p=.03$) (Figure 15). A greater percentage of those working fewer hours per week reported knowledge and experience in searching the literature as compared to those working more than 20 practice hours per week. However, a greater percentage of those working more than 20 hours per week reported having knowledge and experience in producing qualitative research as compared to those working fewer hours.

Figure 15. A comparison of respondents' appraised self-efficacy in performing a literature search and producing qualitative research by number of practice hours per week. Percentage responding "know some theory and have practical experience, but have not mastered/know quite a bit, would not need assistance")

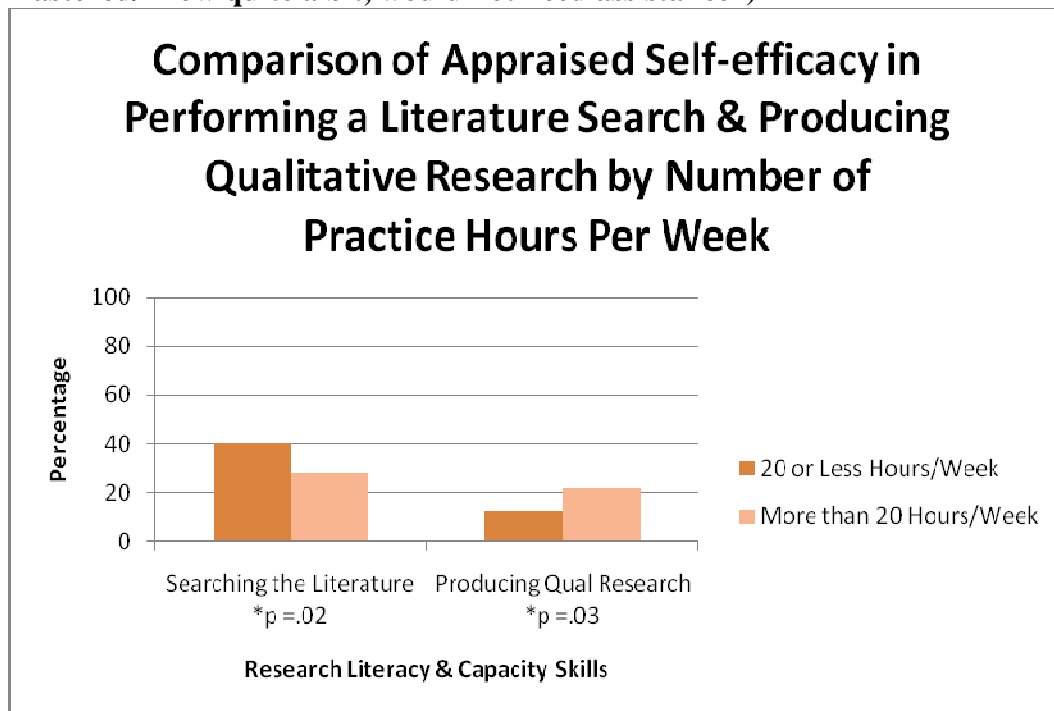


Figure 16 shows that self-efficacy in appraising qualitative research was associated with respondents' sex ($p=.04$) as was self-efficacy in producing qualitative research ($p<.001$). A greater percentage of male respondents reported knowledge and experience in these skills than the female respondents.

Figure 16. A comparison of respondents' appraised self-efficacy in critically reading and producing qualitative research respondents' sex. Percentage responding "know some theory and have practical experience, but have not mastered/know quite a bit, would not need assistance")

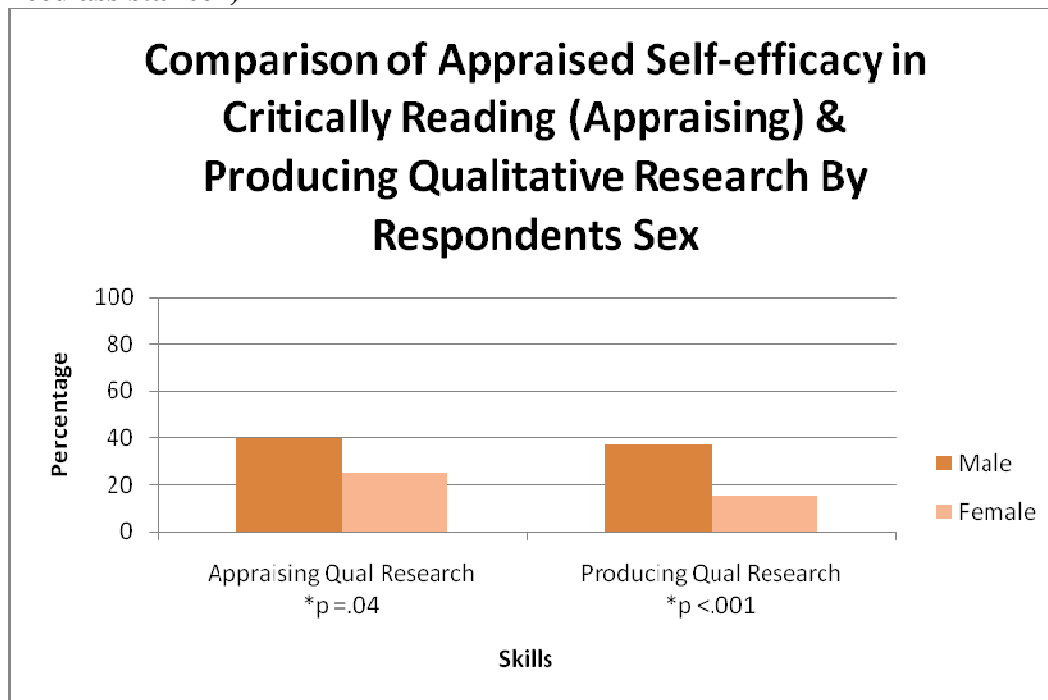


Figure 17 shows that self-efficacy in appraising qualitative research was also significantly associated with the year that practitioners received their MT training ($p=.004$). A greater percentage of those who graduated in the last 10 years report some knowledge and experience in this skill as compared to those who graduated more than 10 years ago. Figure 18 shows that this literacy skill is also associated with the number of years of practice experience ($p=.006$). A greater percentage of those who reported 10 or less years of practice experience reported knowledge and experience with appraising qualitative research as compared to those with more than 10 years of practice experience.

Figure 17. A comparison of respondents' appraised self efficacy in critically reading qualitative research by respondents' date of graduation from an MT program of training (percentage responding "know some theory and have practical experience, but have not mastered/know quite a bit, would not need assistance").

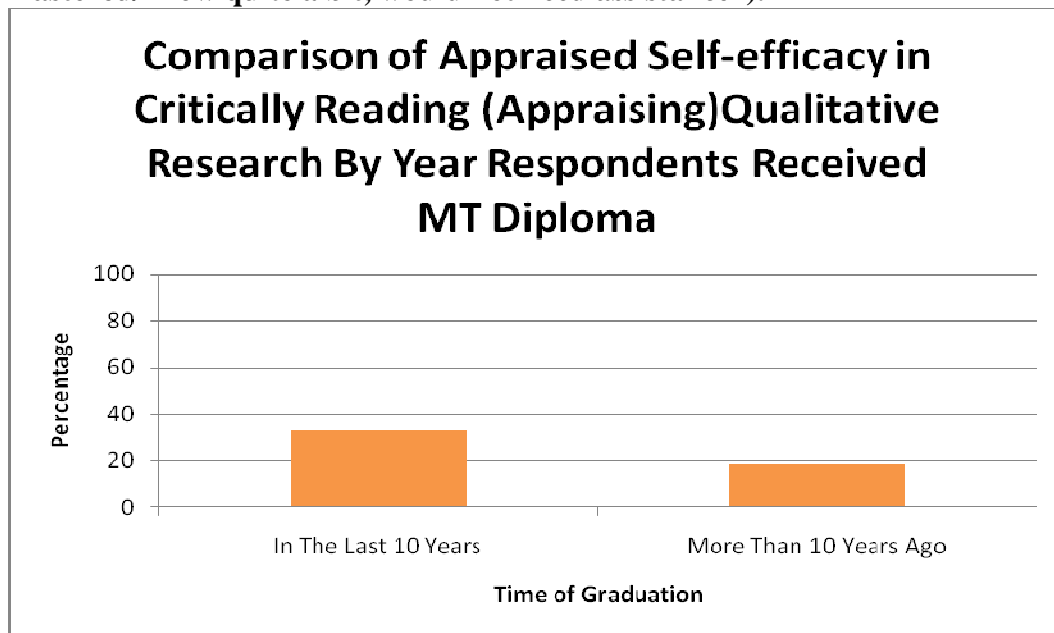
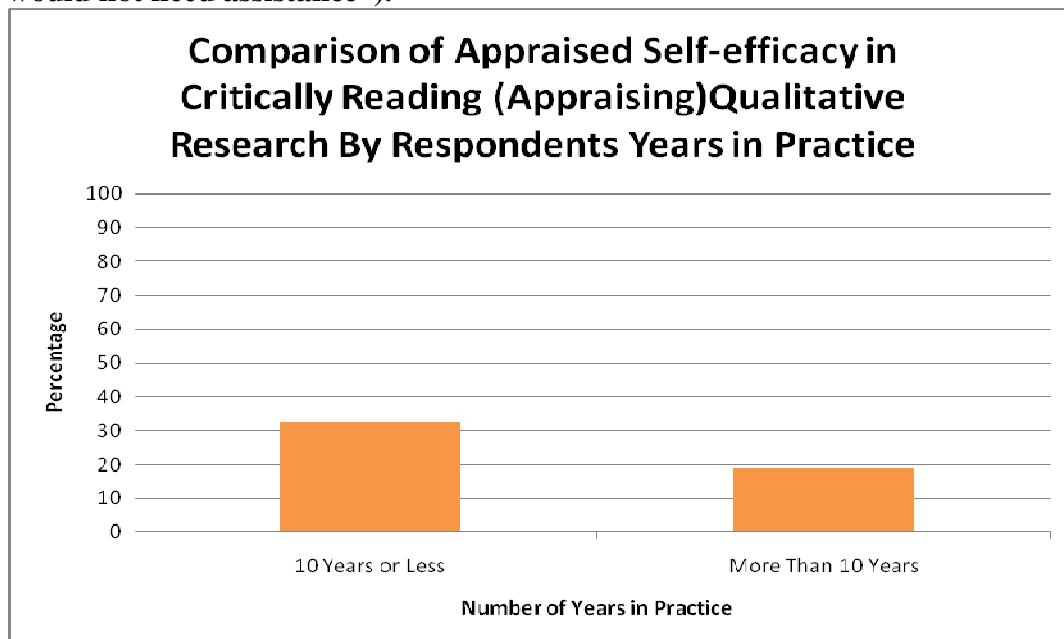


Figure 18. A comparison of respondents' appraised self efficacy in critically reading qualitative research by respondents' number of years in practice (percentage responding "know some theory and have practical experience, but have not mastered/know quite a bit, would not need assistance").



4.1.6 Research Utilization: Results presented here serve to answer the research question – “To what extent, and how do MTAS members currently utilize research findings in their work?” and to meet the study objective of identifying what practitioner characteristics are associated with research utilization.

4.1.6.1 Research Use

The majority (69%) of practitioners report sometimes applying research findings in their MT practice. However, only 11% report always applying research findings in practice. While over 60% report sometimes or always discussing research with clients and colleagues, only 35% report sometimes or always using research to influence conditions, policies, or practices relevant to the field. (Table 7).

Table 7. Respondents reported frequency of use of research in MT practice.

Research Use Statements	Never/Rarely N (%)	Sometimes N (%)	Always N (%)
I apply research findings in my practice	68 (21)	226 (69)	35 (11)
I seek specific research findings for individual client's presentations or problems	104 (32)	178 (54)	48 (15)
I discuss relevant research with my clients	103 (31)	175 (53)	53 (16)
I discuss research findings with my colleagues	126 (39)	164 (51)	34 (11)
I use research to attempt to change conditions, policies or practices relevant to my discipline	208 (65)	92 (29)	18 (6)

4.1.6.2 Use of research-based resources

Table 8 below shows the results of the descriptive analysis of survey participants’ use of research-based resources. Evidence-based text books and professional association publications were the two most common sources used sources of research-based resources. Less than half of the survey respondents report having used research websites such as CAMline, MT research databases such as the MT Foundation database, PubMed/Medline, or the CDSR. Thirty-seven respondents specified “other” sources of research-based information. Of these, eight respondents specified Google, Wikipedia, or the Internet, four specified SHIRP (Saskatchewan Health Information Research Partnership), two specified the Mayo Clinic website, one Upledger.com, one specified CINAHL and one Ostmed. The remainder of the other sources offered as research-

based resources included manuals, textbooks, popular books, magazines, colleagues and experts, courses, and lectures. One respondent offered the following statement in the space offered for “other” sources of research-based information, “Never knew so many existed otherwise I would have”.

Table 8. Survey respondents reported use of research-based resources:

Resources	Have Never Used N (%)	Have Used N (%)
Research websites (ex. CAMline)	174 (52)	147 (46)
Evidence-based textbooks (ex. Outcome-Based Massage)	89 (28)	235 (73)
Peer-reviewed journals (eg. Journal of Alternative and Complementary Medicine)	114 (36)	206 (64)
Pub Med/Medline or other online research databases	229 (72)	88 (28)
Cochrane Database of Reviews (online Cochrane Library)	298 (93)	21 (7)
MT research databases (ex. MT Foundation database)	204 (64)	113 (36)
MT Association publications (ex. MTABC’s Research Report)	109 (34)	216 (67)
Other	28 (48)	31 (53)

4.1.6.3 Sources of Practice knowledge

Table 9 below shows the results of the descriptive analysis of survey participants’ reported sources of practice knowledge. The top three sources of knowledge used by participants were information learned about each patient/client as an individual, clinical experience over time, and information learned in massage school. Less than 5% reported always using articles published in peer-reviewed medical or massage therapy journals. Nobody reports always basing the knowledge that they use in their practice on Cochrane reviews.

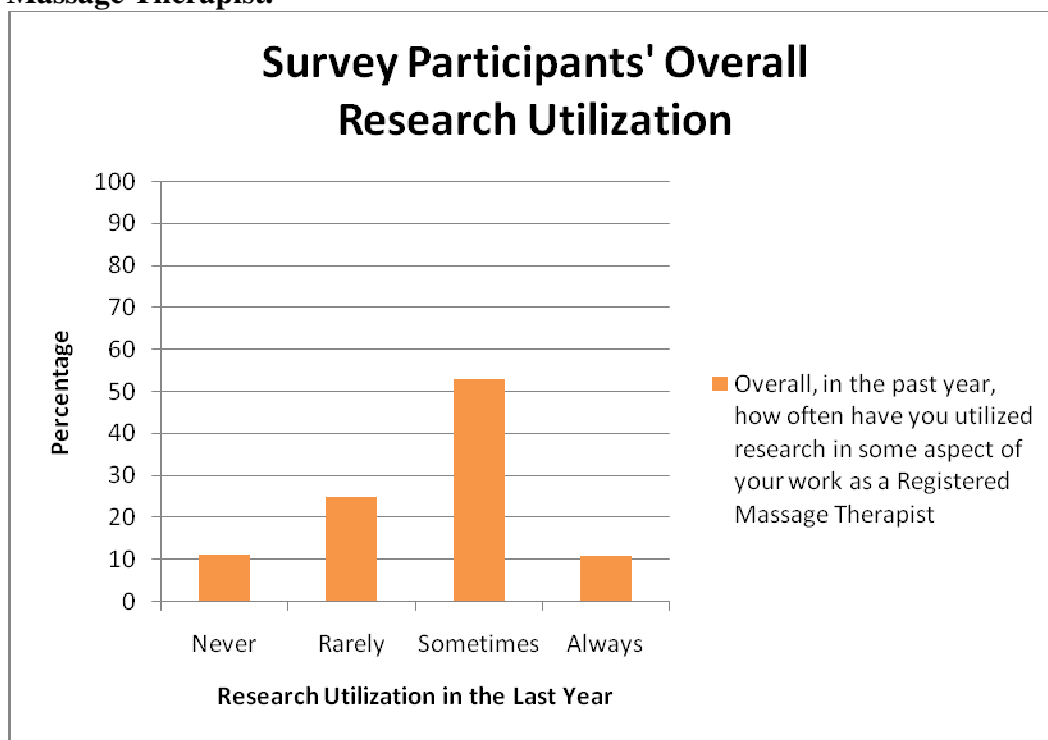
Table 9. Sources of Practice Knowledge (% of participants responding never/rarely, sometimes, or always)

Practice Knowledge Sources	Never/Rarely (%)	Sometimes (%)	Always (%)
Information that I learn about each patient/client as an individual	0.3	16.0	83.7
My intuition about what seems to be "right" for the patient/client	4.8	47.6	47.6
My clinical experience as a Massage Therapist over time	0.6	19.8	79.6
Information that I learned in massage school	1.2	36.0	62.8
Information from text books	3.0	53.2	43.8
Articles published in peer-reviewed medical journals (ex. Canadian Medical Association Journal)	55.9	39.5	4.6
Review articles published in the Cochrane Library	95.1	4.9	0.0
Articles published in peer-reviewed massage therapy journals) ex. The International Journal of Therapeutic Massage and Bodywork)	64.3	32.0	3.7
Articles published in MT trade journals (ex. Massage Magazine, MT Canada)	34.3	57.4	8.2
Articles published in electronic magazines (ex. MassageTherapyPractice.com)	64.1	31.9	4.0
Information from colleagues/peers	11.5	74.5	13.9
Information from conferences/continuing education courses	4.6	59.6	35.8
What has worked for me for years	4.6	51.5	43.8
The ways that I have always done it	14.8	71.6	13.6

4.1.6.4 Overall Research Utilization

Figure 19 below shows the results of the descriptive analysis of survey participants' reported overall research utilization. Overall research utilization was defined in the survey item as follows: The use of any kind of research finding (massage therapy or non-massage therapy), in any kind of way, in any aspect of your work as a Massage Therapist. The majority (53%) responded "sometimes" in answer to the question "Overall, in the past year, how often have you utilized research in some aspect of your work as a Registered Massage Therapist". Approximately 1/3 of the participants reported never or rarely utilizing research.

Figure 19. Percentage of survey participants' responses to the question "Overall, in the past year, how often have you utilized research in some aspect of your work as a Registered Massage Therapist."



The results of univariate analysis of overall RU by practitioner characteristics revealed that overall RU was not associated with respondents' sex, age, level of education (MT diploma alone, or MT diploma plus other post-secondary education), practice setting, practice orientation, or

whether or not the participants had ever participated in a research project. Table 10 below shows that overall research utilization was significantly associated with whether or not participants had completed a research course ($p=.005$), the number of hours per week in MT practice ($p=.005$), and the year practitioners received their MT diploma ($p=.01$). A greater percentage of those that had taken a research literacy or methods course, had received their diploma in the last 10 years and who report working more hours per week responded that they sometimes or always have utilized research in their practice within the last year.

Table 10. Characteristics associated with research utilization (% reporting sometimes or always utilizing research in their work in the past year).

Characteristic	Comparison		P
Year Received Diploma	In the Last 10 Years (N = 202)	More than 10 Years ago (N = 124)	
	69	55	.01
Number of Practice Hours per Week	20 or Less (N = 136)	21 or More (N = 186)	
	55	70	.005
Completed Research Course	Has Never Taken (N = 254)	Has Taken (N = 70)	
	60	79	.005

Multivariate Analysis: Procedure 1

Logistic regression analysis utilizing the Enter procedural approach as recommended by Norman & Streiner (60) resulted in the finding of 4 variables statistically significantly associated with overall research utilization while holding all other variables in the model constant: the belief that MT practice should be based on research, reference to peer-reviewed journals, reference to PubMed/Medline/other online research databases, and number of practice hours per week (Table 11).

The odds of reporting sometimes or always utilizing research were 5.2 times greater for those who reported referring to PubMed/Medline/other online databases as compared to those who

reported never having used this resource. The second strongest association was with respect to the belief that MT practice should be based on research and the analysis revealed that the odds of sometimes or always utilizing research was 3.9 times higher in those who held this belief as compared to those who did not. The odds of reporting utilizing research were 2.9 times greater for those who reported working more than 20 hours per week or less in their MT practice as compared to those working 20 hours or less, and 2.8 times greater for those who reported having referred to peer-reviewed journals as compared to those who reported that they never have used this resource.

Three variables, though not statistically significant, were retained in the model as they enhanced the model fit as assessed through the likelihood ratio test. These variables were having completed a research literacy or methods course, the year respondents' received their MT diploma, and willingness to suspend belief in information learned in massage practice when contradicted by research. Other variables tested that were not retained in the model include sex, age, practice orientation, research experience, willingness to suspend belief in information obtained in massage school, knowledge and experience in conducting a literature search, knowledge and experience in appraising quantitative research, knowledge and experience in appraising qualitative research, and reference to Association publications.

Table 11 shows the model using the Enter procedural method. Tables 12 & 13 show the model summary and the results of the Hosmer & Lemeshow Test.

Block 1: Method=Enter

Table 11. Variables in the equation using the Enter model building procedure.

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
MT practice should be based on research	1.366	0.326	17.591	1	.000	3.918	2.070	7.417
Reference to peer-reviewed journal	1.034	0.312	10.959	1	.001	2.813	1.525	5.190
Reference to PubMed/Medline/other online research databases	1.657	0.417	15.786	1	.000	5.242	2.315	11.868
Number of practice hours per week	1.075	0.321	11.243	1	.001	2.931	1.563	5.496
Completed research literacy or methods course	0.725	0.402	3.253	1	.071	2.065	0.939	4.541
Year received diploma	0.572	0.314	3.312	1	.069	1.772	0.957	3.280
Willingness to suspend belief in information from practice experience	0.654	0.351	3.480	1	0.062	1.924	0.967	3.826
Constant	-2.443	0.479	25.984	1	.000	0.087		

Table 12. Model Summary using the Enter procedure

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	265.874 ^a	0.241	0.334

Table 13. Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	4.99	8	0.759

The overall test of the model, calculated as the initial -2log likelihood – the model -2log likelihood [338.784-265.874] = 72.91. The tabulated value of χ^2 at 7df (alpha .05) = 14.067

Therefore, as the calculated test statistic > the tabulated value, the null hypothesis that the overall model does not contribute to the prediction of RU is rejected.

Multivariate Analysis: Procedure 2

Logistic regression analysis utilizing the forward stepwise conditional approach to identify variables that predict MTs' overall research utilization revealed 5 significant predictors: the belief that MT practice should be based on research, reference to peer-reviewed journals, reference to PubMed/Medline/other online research databases, number of practice hours per week, and completion of a research literacy or methods course (Table 14)

Having referred to PubMed/Medline/or other online research databases was the strongest predictor with those who had referred to this source (within the last year, month, or week) being 4.5 times more likely to report sometimes or always utilizing research in their work as an RMT. The other statistically significant predictors were the belief that MT practice should be based on research (odds ratio, 3.9), having referred to peer-reviewed journals (odds ratio, 2.8), working more than 20 hours per week (odds ratio, 2.95) and having completed a research literacy or methods course (odds ratio, 2.4).

Variables that were not statistically significant and therefore did not enter the model were sex, age, year respondents' received their MT diploma, practice orientation, research experience, willingness to suspend belief in information learned in massage school, willingness to suspend belief in information learned in practice experience, knowledge and experience in conducting a literature search, knowledge and experience in appraising quantitative research, knowledge and experience in appraising qualitative research, and reference to professional Association publications.

Tables 14, 15, & 16 show the model, model summary, and results of the Hosmer and Lemeshow Test using the forward stepwise conditional approach.

Table 14. Variables in the equation using the forward stepwise conditional approach.

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1	MT practice should be based on research	1.555	0.39	16.07	1	.000	4.735	2.214	10.13
	Constant	0.291	0.15	3.871	1	.049	1.338		
Step 2	MT practice should be based on research	0.993	0.29	12.1	1	.001	2.7	1.543	4.725
	Reference to PubMed/Medline/other online research databases	1.595	0.4	16.22	1	.000	4.929	2.268	10.71
	Constant	-0.31	0.23	1.866	1	.172	0.731		
	MT practice should be based on research	1.091	0.3	13.51	1	.000	2.976	1.664	5.324
Step 3	Reference to peer-reviewed journal	1.01	0.3	11.45	1	.001	2.747	1.53	4.932
	Reference to PubMed/Medline/other online research databases	1.483	0.4	13.58	1	.000	4.405	2.002	9.691
	Constant	-0.98	0.31	9.86	1	.002	0.375		
	MT practice should be based on research	1.357	0.32	17.81	1	.000	3.883	2.068	7.292
Step 4	Reference to peer-reviewed journal	1.038	0.04	11.36	1	.001	2.823	1.544	5.162
	Reference to PubMed/Medline/other online research databases	1.533	0.41	13.99	1	.000	4.632	2.074	10.34
	Number of practice hours per week	1.05	0.32	11.12	1	.001	2.856	1.541	5.293
	Constant	-1.77	0.41	18.44	1	.000	0.171		
Step 5	MT practice should be based on research	1.360	0.325	17.494	1	.000	3.896	2.060	7.370
	Reference to peer-reviewed journal	1.031	0.311	10.988	1	.001	2.804	1.524	5.157
	Reference to PubMed/Medline/other online research databases	1.504	0.414	13.188	1	.000	4.498	1.998	10.127
	Number of practice hours per week	1.084	0.319	11.546	1	.001	2.955	1.582	5.521
	Completed research literacy or methods course	0.855	0.396	4.668	1	.031	2.352	1.083	5.110
	Constant	-1.945	0.426	20.864	1	.000	0.143		

Table 15 shows the model summary using the stepwise forward conditional procedural method.

Table 15. Model summary using the stepwise forward conditional approach.

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	307.902 ^a	.077	.106
2	295.545 ^b	.121	.166
3	283.842 ^b	.161	.221
4	272.144 ^b	.199	.273
5	267.117 ^b	.214	.295

Table 16. Hosmer and Lemeshow Test

Step	Chi-square	df	Sig.
1	.000	0	.
2	2.495	2	.287
3	3.298	5	.654
4	2.453	8	.964
5	2.581	7	.921

In assessing the overall test of significance, the value of χ^2 for the model is 61.044. The tabulated value of χ^2 5df for alpha .05 is 11.071. Thus a decision can be made to reject the null hypothesis that the variables taken together do not contribute significantly to the overall research utilization.

4.2 Findings of the qualitative analysis

To display the data obtained using the case study methodology, I will first describe the participants' characteristics, the critical incidents that they described in their successes and challenges in utilizing research in their work as RMTs, the themes or key factors and sub-categories that emerged in our conversations about events or incidents utilizing research in their work, their perceptions about the value of the role of research in their work, and finally the representation of their responses to a question of the difference between research-informed versus research-based MT.

Participant Characteristics

Three male MTs and three female MTs participated in the case study interviews. One participant had one year of practice experience, one had three years experience, one 8 years and the remaining three had over 10 years of experience. All but one practiced in urban Saskatchewan. Two participants had other employment in addition to their work as MTs. Three participants were sole practitioners, two worked in MT clinic environments and one in a multidisciplinary clinic environment.

Four of the six interview participants were able to relate one or more specific events of utilizing or attempting to utilize research findings in their work as RMTs. Six distinct situations were recalled by the interview participants. Four of the specific events recalled were successful or positive experiences and two were unsuccessful or negative experiences.

I will first describe each the events offered by the participants in two categories: positive or successful events and negative or unsuccessful events related to the utilization of research. To improve readability of the presented data extracts, ellipses are used where words are deleted and where words are added they are identified in square parenthesis.

Positive Research Utilization Experiences

One participant related an event of searching for literature on the Internet, to inform an interest in a particular method of manual therapy in the participant's work as a MT. This participant felt that the information obtained from a free access peer-reviewed journal (non-massage therapy medical) was helpful, guided the assessment of all MT clients presenting with musculoskeletal complaints of pain and dysfunction and the subsequent approach to treatment including aspects of safety. Specifically this individual described the experience of utilizing research this way:

The massage therapy that I do comes down from the research done by an orthopaedic surgeon...the research indicates what I should be finding...what I know comes from the investigations and results as published...you can challenge me. I will point you to [the literature].

This participant expressed that using published research in this chosen therapeutic approach allowed for effective treatment outcomes without clients being injured by the therapy, about which this practitioner felt very strongly.

Another participant related an event of searching for literature on the Internet to seek answers for a common presenting complaint of back pain. This practitioner related finding information in a non-massage therapy medical journal that was felt to have an important impact on assessment and treatment of clients presenting with back pain. This individual related that client outcomes were improved by following the research findings and that the time spent in searching for this information was “an investment”. This practitioner felt positive about this example of using research information in practice and expressed that: “I work for my clients...this gives me a practice advantage because few other therapists can base their treatments on actual research”.

Another participant related an event of searching the Internet for research information on treating shoulder pain. When asked what lead up to this event the participant responded, “I hate not knowing”. This is what this individual had to say about the successful search for research information:

When I was able to read the articles and understand how they were treating different problems of the shoulder, I took that back to my practice, and was able to apply it and was able to see the results. I was able to mimic the results that they had talked about in the studies and I felt like a better massage therapist. I felt like I was not wasting my patient’s time by not knowing and I felt like I was earning my keep...when they come to me looking for help, I need to be in the know to be able to help them, otherwise I am wasting their time.

The practitioner related that the consequence of this occurrence of using research was being able to improve clients function in activities of daily living and that this resulted in feeling “so rewarded. Like I was good at what I do...if the client is not rewarded; I am not rewarded.”

Another related event regarded a participant’s communication to a physician described by the participant as “still dubious about massage therapy”. The critical incident related was the occurrence of having found research on MT and shoulder pain and mailing a copy of the research study to the physician and also sharing with the physician these thoughts about the existence of the research paper and it’s impact on the therapist’s work with clients with shoulder pain: “not

only did the study prove it works but I took from the study and made it work in my clinic and, you know, helped people with it”.

Negative Research Utilization Experiences

One participant related an incident in which an unsuccessful search was initiated for research information on knee pain and this was the stated result:

I haven't been able to lay my hands on articles that say with this type of knee pain, you know...this is the protocol we need to take with knee pain...I didn't answer my question and therefore I was frustrated because I didn't have an answer and I like answers.

Another participant related a negative experience in RU in looking for information on the Internet related to a client presentation of peripheral nerve involvement and an unfamiliar diagnosis. It was stated that “I tried to look into it but didn't really find a description that fit exactly what [the client] had”. The experience was reportedly frustrating but when asked what was the consequence of not finding more research information, the participant responded:

I am not sure that there was one. It didn't really change any of the treatment that she and I did and just a gap in my knowledge that I would have preferred to have filled...it seemed to be resolved quite well with the treatment.

Key Factors in Successes and Challenges in RU

In relating their perceptions about the role of research and their successes and challenges in RU the key factors and sub-categories that emerged as participants answered the interview questions where 1) issues of access, 2) issues of research, 3) practitioner assumptions and values, 4), issues of impact on care. Data extracts are presented here to illustrate the key factors and sub-categories within these factors.

Access: For this key factor the two sub-categories that emerged from the descriptions of incidents were apparent lack of skills in finding and critically appraising published research, and belief that insufficient quantity of MT research exists.

In describing events related to the utilization or attempt to utilize research, participants' responses revealed substantial challenges regarding finding and critically appraising published

research. Some of the participants acknowledged that personal limitations in necessary skills may explain part of the problem in acquiring information from research while others clearly perceived that there was simply insufficient research available to access. All expressed some frustration at the perceived inaccessibility of the desired knowledge. For example one participant stated; “Massage Therapy research is hard to find. There are only three or four reviews on Massage Therapy in the entire Cochrane Library”. One participant stated quite frankly “I haven’t found a lot of good research that pertains to massage therapy”. Another participant stated it this way:

I haven’t read a lot of the research because there isn’t a lot of research...You know, you can go the University, the main library and you can research just about anything, but you know soft tissue work, one of the first medicines around seems to be least documented...If you look at the medical field and the prescriptions, there is a lot more documentation on muscle relaxants and what they do for you than there is for what massage therapy does for you

One participant stated “I feel that there is not a lot that I have found. Is it out there, I don’t know? I haven’t been able to find everything that I have gone looking for, you know. In regard to the perception of this inadequate supply of MT research another participant suggested that:

Research in the application of massage and the research that would come down and through into massage, I imagine, would be very medical based. And the people at the top of the heap are, there is not a lot of research going on up there. A lot of practice up there but I am not sure that until a researcher has themselves been very, very moved by the effectiveness of a modality of massage they wouldn’t really care about it that much

The Research: For this key factor the sub-categories that emerged from the descriptions of incidents were concerns about the readability and understandability of published research validity of research available, and perceived challenges to the conduct of research in MT. The interview participants described issues that they perceived as barriers to utilizing research in their work as RMTs. For example one participant stated:

With the training that I do have, there have been some papers that I stumbled across on the Internet...that I might as well be reading Greek. You know, so having that research presented in an understandable format for someone with my level of training I think is important

Another participant stated a view of research that perhaps typifies insufficient understanding of the research process in relating that “Research studies, are very biased and it doesn’t matter if it

is drug company funded or, you know, just biased on the fact that people are different every day when they are doing something... Everybody feels different and is different”. Another participant’s response demonstrated insight into challenges regarding MT research in stating that “There are a lot of problems with trying to study anything like massage therapy and problems with trying to standardize treatment and a lot of restrictions placed on the therapists...placebo effects occur with technique and it is hard to study”

The Practitioner: For this key factor sub-categories that emerged from the descriptions of research utilization that were rather polar in nature. Several participants’ responses demonstrated an assumption that various sources of information with uncertain scientific derivation constitute “research”. Some of the participants held this view and a co-occurring view that there is a lack of research-based information available. In describing their utilization of research in their work, several participants assumed that the educational materials used for instruction in their massage therapy programs such as text books and instructional manuals were research based.

It was clear that some of the participants assigned research-based status to the authority and opinion based information presented in the massage therapy curriculum in Saskatchewan. One participant stated “Well all the education I took was based on some sort of research, so you know I got a very good massage education and [pause] my education was mostly researched based”. Another remarked similarly in reference to technique manuals and textbooks “Techniques that work and are proven and are documented ...there must have been a fair amount of research to get to that point. You know, even just to put together a book of treatments”. Not all participants made this assumption however. One stated that:

So many of us, I think, as RMTs we do know what works because we have done it in our clinics through trial and error. We have taken the tools that we have learned from school and we have applied them as much as we can in our clinics and we have kind of weeded out what works and what doesn’t work and we have taken classes and have draw from the classes and the opportunities are given to us and we weave it into our practice but none of it is evidenced based research

Another participant articulated this view similarly by stating:

There were pretty much no studies provided in massage therapy education or very rare and only by the virtue of a very good teacher here and there. But, mostly it was just based on textbooks. Not that those aren't valid but they are not always as up to date, they are not as contemporary as they could be.....even if you do read a study in a textbook it is not necessarily describing how the study was done.....how many participants in the trial there were and things like that so you have some idea of whether, you know, you can form an opinion whether it was a valid study or not in your own mind

Several participants put forth a view and expressed considerable frustration that there is a lack of research-evidence based information available, especially in continuing education. One participant said in reference to continuing education providers and a lack of a process for vetting continuing education information:

If you are going to teach, dammit there has got to be a peer group out there that should be evaluating what you are teaching. What is your literature? Where did you get this? ...I want to see your bibliography. I want to see the background that brought you to where you are. Validation!

Another participant described the lack of research evidence-based continuing education this way:

It seems at the moment like that a lot of the current [continuing education] courses are not backed up, their material is not backed up by research..... Maybe if there were more research in massage therapy as a whole and if they had to step it up and compete more for the attention of massage therapists they would perhaps back their courses up with research.

The care:

For this key factor the sub-category that emerged from the descriptions of incidents was a relative lack of direct impact of research on the delivery of client care. Regarding the utilization of research the findings from the interview suggest that research evidence was used indirectly, as in informing the way one thinks. This is illustrated in the comment from one participant:

From the few articles that I read in the massage therapy magazines, in Canada and the US, there are some people that are doing some things and there is some research going on. I wouldn't say it has really impacted me too terribly much...I am hoping that the more I learn, the more I am going to find out that it has... I am sure, you know, that little different things, articles that I read and - oh yea, maybe I should try that or, you know, that different techniques in something you have read, you know, subconsciously, I am sure you put things in there and you just don't think about them

Another participant spoke of the lack of impact on practice of not finding research information but articulated also an impact on perceived knowledge. Specifically, one participant spoke about seeking answers for a client presentation and not finding anything helpful on the internet. It was related that this felt frustrating but regarding a consequence “I am not sure that there was one. It didn’t really change any of the treatment that she and I did and just a gap in my knowledge that I would have preferred to have filled.”

Research Perceptions

In response to the interview question “is research important?” all six participants stated that yes, research was important. Participant’s responses characterized the view that research evidence legitimizes the therapy both in the current context and for the future. In addition the results revealed that this legitimization also extended to confidence in their own work and for the contribution to population health. Another perceived benefit of research was as a vehicle to communicate about the work to others and for informing clinical decisions. The importance of research was illustrated as “Research proves to others and ourselves that MT is valuable”.

One participant responded this way:

Yes. Well, it is hard to advance I think as, in any field, without research because there is no standardization if it is all just experience and anecdotes. Research also provides a communication method...to communicate with colleagues...to share case studies and things like that

Another participant stated that:

Absolutely, it is important...we have to be able to prove ourselves...we have to have full documentation and it is not just testimonial, it is proof...people want proof; I want proof...if more therapists could prove to their patients, to potential patients, and to doctors, that what we do...has vital impact on the population at large then we would be recognized as health care providers, primary health care providers, and as a full profession...the next obviously huge step is the insurance carriers. If we could prove to the insurance carriers, via research, that our treatments are effective...that we are valuable...what we do is worth insuring.

Regarding the value of research to inform practice, one participant said this:

Well, it is important not only for you to maybe understand further what you are doing and how you are helping clients or that you are doing the right thing for a client, helping them in the right way. And I think that is key in our work.

Research-based versus research-informed

Interview participants were asked the following questions “What do the terms research-based MT and research-informed MT mean to you?” The results reveal some inconsistency in the interpretation and meaning participants gave to these two phrases. What was consistent in the results of this query was that the phrase “research-informed” denotes that there is insufficient research available to use the stronger phrase “research-based”. One participant articulated this view as “Well there isn’t enough research to say that all our work is research-based...MT work is informed when it uses what research exists [to help make decisions]”. Another had a slightly different interpretation as “Research-based establishes the modality. Research informed...would guide the therapist in their effectiveness”. This participant suggested that the type of research determined whether the results could be used as a base for practice or to inform practice. It appeared that the view held was that research regarding the effectiveness or efficacy of the therapy would be considered to be a base for practice while research such as studies regarding mechanism of action of MT would be considered fodder to inform practice.

Summary of Qualitative Findings

In summary, most, but not all of the case study participants were able to relate one or more specific events from their work as RMTs in utilizing or attempting to utilize research. Of those events that were described, more were positive or successful RU events than negative or unsuccessful events. The circumstances leading up to events of utilizing or attempting to utilize research were largely motivated by the practitioners’ perceived need to know answers for specific client presentations of musculoskeletal conditions.

The nature of the events related understandably varied among the specific events but the descriptions revealed a common thread of the successful or unsuccessful search for research-based information. The affective component was clearly related to the challenges or achievements with frustration or a sense of satisfaction expressed respectively. Consequences of the events similarly related to the degree of success in searching for and finding research information but were not entirely consistent. Some participants perceived a lack of impact on

their practice whether they sought new information or not, sought and found, or sought and did not find.

Four key factors emerged from the interview dialogue and these centered on issues of access, issues pertaining to research, assumptions and values held by the participants regarding research, and issues reflective of the perceived impact of research on client care. Regarding issues of access, the participants' responses strongly suggest a lack of research literacy skills and the belief that insufficient quantity of MT research is in existence.

Issues related to research centered on perceived challenges in understanding both the products and process of research. Findings related to the practitioners revealed some confusion about what materials are or are not of certain research-based origin. A concomitant finding here was a somewhat polarly oriented opinion that pre-service and post-graduate education lacks a clear research base. Emergent results regarding impact on care showed similarly inconsistent patterns with some participants perceiving little direct impact and some perceiving quite concrete impact. In addition at least one participant's responses demonstrated that this impact may be indirect as in influencing the way one thinks.

All participants viewed research as important. Most were emphatic in sharing their positive regard for the role of research in MT. The results pertaining to an emergent idea that was explored further in the interviews regarding interpretation of the terms "research-based" and "research-informed" offered far less clarity of finding. The various interpretations offered by participants revealed little consistent or shared meaning other than that "research-based" suggested to the participants a stronger foundation, for some this seemed to relate to availability of research, for others in the obligation to apply what is available to practice, and for others the nature or type of research available appeared to lend weight to whether or not it might "inform" or be considered a "base" for practice.

5.0 Discussion

Research was perceived positively by Saskatchewan RMTs who participated in this study. The perceived importance of the role of research in MT practice was evident in practitioner's beliefs about and endorsement of the importance of research and their reported willingness to change practice or beliefs when research contradicts their previously held knowledge. However, participants lacked confidence, as indicated by reported self-efficacy, in their skills and abilities to find and critically evaluate research, and less so yet in their confidence in conducting research.

Within the survey sample, most practitioners report utilizing research, at least sometimes, in their practice but few always do so. When research was utilized by MTAS members, it was largely in the form of applying research findings to practice, seeking solutions to client problems, or discussing research with clients and peers. There was less evidence of utilization of research to change conditions, policies, or practices relevant to the MT field.

Case study participants' information, while each contribution unique, added to the richness of the tapestry of positive regard for research, challenges in obtaining research information, and mixed success in utilizing research in practice. While few in number, the interviews provided additional insight that Saskatchewan RMTs were using research information and some were using it directly, "I took that back to my practice, and was able to apply it and was able to see the results", indirectly, "recalling the fact that this research had been out there", and persuasively "I ...ended up mailing [the physician]....a copy of [a MT] study".

Personal and professional factors influenced Saskatchewan RMTs utilization of research. The behaviours of referring to peer-reviewed journals and online research databases and working more than 20 hours per week in practice were predictive of research utilization as was the belief that MT practice should be based on research. The odds of utilizing research were more than two times greater in those who worked more than 20 hours per week, who referred to peer-reviewed journals, more than three times greater in those who believed MT practice should be based on research, and five times greater for those who use online research databases.

The strong association between the number of hours spent treating clients and overall research utilization is interesting in light of the common finding that lack of time has been identified as a significant barrier to the use of research in practice in other health care disciplines (27,33,61). Participant's responses in the case study interviews in this study clearly indicated some frustration with the amount of time required to search for research information although this appeared to be largely a consequence of perceived lack of efficiency in searching skills. It may be however, that the more contact hours a therapist has with clients the more they find need to seek information to use in their work.

That the odds of utilizing research were greater for those participants who more frequently referred to peer-reviewed journals and online research databases underscores that to use research practitioners first have to know of it, have access to it, have found it, and have read it. The finding that belief that MT practice should be based on research is predictive of RU emphasizes the importance of a positive regard for research in RU.

5.1 Comparisons to Studies from Conventional, Allied, and other CAM practices:

Perception of Research

That the MTs in this study perceived research positively is consistent with the findings from the studies in conventional, allied, and other CAM medicine. It is important to note that in the studies involving GPs', surgical specialists', and PTs' the attitudes assessed were attitudes toward evidence-based medicine. These researchers used the term EBM as synonymous with RU. Again, making that somewhat uneasy acceptance of this usage, the finding of MTs' positive endorsement of research in MT practice is similar to GPs welcome of the promotion of EBM (27), urologist's strong endorsements of EBM (29), and PTs endorsement of EBP (33). Saskatchewan MTs' positive regard for research also compares similarly to the positive perceptions of Australian acupuncturists(41), Alberta chiropractors and MTs (40), UK massage practitioners(42), Ontario chiropractors (39) but is in contrast with the more negatively oriented attitudes toward research found amongst Ontario Reiki practitioners (39) and inconsistent views of Ontario homeopaths (39).

From Reiki to urology, these disciplines represent a broad array along the professionalization continuum indicated by status of regulation, degree of professional organization and levels of pre-service education required. That Saskatchewan RMTs demonstrated similar endorsement of research to those groups with advanced legitimacy and position on the professionalization trajectory suggests that practitioners' views were aligned with more mainstream practice principles at least with respect to valuing research as a form of knowledge to inform practice. This is especially interesting in that many important components of professionalization are still in the infancy stage of development in MT.

MT in Saskatchewan has not yet achieved status as a regulated health care profession. At the national level there is a fledgling professional body to which MTAS belongs and its voice and force is as yet not fully developed. There is also another national association with goals at cross-purposes regarding regulation and educational standards for MT (62). At the provincial level the MTAS is strongly supported with the voluntary membership of over 800 MTs and while their stated mission includes the encouragement and enhancement of the science as well as the art of MT through the maintenance of high standards (63) such normative standards with respect to evidence-based practice have not yet been developed or widely communicated to stakeholders.

Massage therapy has not yet achieved the full maturity of mainstream legitimacy of other health care professions dependent on broadly applied standards and policy committed to patient-centred care and professional socialization in practice and in education. There is as yet no degree-based education in MT in Canada although this is being actively pursued in at least one regulated province. In Saskatchewan, MT training programs are offered by private for profit institutions and not offered in government supported applied science and technology institutes as in Ontario. Thus the level of pre-service education is low as compared to the conventional and allied disciplines and the discipline of chiropractic care reviewed in the literature. It is possible that MT perceptions of research may be quite disparate across the country and internationally due to varied development in terms of regulation, professional organization, and required pre-service education.

Univariate analysis in the current study revealed no association between perception of research as indicated by agreement with statements of belief about research and age, years since graduation, years in practice, or level of education. These findings are in contrast with the findings from the study involving PTs where younger age, fewer years since licensure and higher degree attainment were all significantly associated with positive perception of research (33) and also with the study findings involving acupuncturists where increased years in practice was negatively associated with the perceived importance of research. Where MT has status as a regulated health care profession, education and training curriculum has demonstrably grown in recent years to meet changing standards and requirements including the inculcation of evidence-based practice as a core value. Massage therapy therefore sits at the cusp of change and progress in its development relative to the historical development of other disciplines like PT.

Use of Research-based resource:

Textbooks and professional association publications were the top two sources of research-based information selected as used by the Saskatchewan RMTs in this study. Most reported having referred to journals but just over one-quarter of the sample reported having used PubMed/Medline/CAM on PubMed/ or other online research databases and less than 10% had used the CDSR. Findings from the early study by McColl, Smith, White and Field (1998) revealed low levels of awareness and use of discipline relevant journals and comparably low levels of use (less than 10%) of the CDSR by GPs, with one-half of that sample reportedly using Medline to search for literature within the last year (27).

Oliveri, Gluud, and Wille-Jorgensen (2004) reported that textbooks were also the most frequently consulted source of information for the hospital doctors in their study and that one-half of their sample reported never using the CDSR (28). Dahm et al (2009) reported comparable low awareness and use of the CDSR by the urologists in their sample, reporting that over 70% were unaware of the CDSR and less than 10% had used it. They also found comparably low levels of use of PubMed, reporting that one-third of their study participants were aware of and/or used PubMed (29).

Suter, Vanderheyden, Trojan, Verhoef, and Armitage (2007) found that the MTs in their study selected handbooks as the most frequently accessed resource followed by colleagues, and websites, and for the chiropractors in the study the top three sources were websites, peer-reviewed journals and then colleagues. In that study, the authors report that few of the chiropractors (9%) and fewer of the MTs (1%) used the CDSR at least once per month (40).

This variety in sources used by health professionals to obtain research-based information demonstrates both that the dissemination of information is complex and that some potential sources of information are as yet underutilized in many disciplines including MT. There are currently few reviews pertaining specifically to MT in the CDSR. However, the systematic review of MT and low back pain has had significant impact on the acceptance of MT as an effective intervention for low back pain. This one review has contributed to the legitimacy of MT as a potential contributor in the management of this pervasive and difficult condition in the population as the CDSR is a valued resource for policy makers and for referring health care professionals.

It is likely that the relatively low levels of use of online databases reflect an insufficient awareness of the access to these resources and confidence in navigating such databases to find research information. The MTAS organization had only quite recently negotiated access to the SHIRP databases and at the time of data collection the database was not yet in the user-friendly format in which it now operates. Also, it is important to note that the SHIRP online database offers exposure to not only peer-reviewed sources but also to valuable research-based information in quarterlies such as the *Massage & Bodywork Magazine* through the AMED (Allied & Complementary Medicine) database. It could be that respondents in this survey were accessing these types of resources as well in responding to the question regarding use of online databases. For CAM generally, research evidence to inform practice is not always available in mainstream databases and respondents may be accessing valuable research information from other sources.

Regarding the heavy reliance on textbooks amongst the MT respondents and participants in other studies it is important to note that it is not known if these textbooks are based on research evidence or if they represent authority opinion. While there are research-based MT textbooks available including subjects from pathology to technique and the management of specific disorders, the responses from most interview participants suggested that at least some of the practice textbooks to which they refer may be largely authority based. This further suggests the complexity in disseminating research-based information in MT and in CAM fields generally where the availability of research-based information in the form of printed textbooks is still in its infancy.

Self-appraised efficacy in research literacy and capacity

Of the MTAS members in this study, only one-third reported having experience in conducting a literature search with less than 10% reporting confidence in their ability to do so without assistance. Three-quarters reported having no experience in analyzing or interpreting statistics. Self-appraised confidence was low in reading and critically appraising both quantitative and qualitative research literature. Producing qualitative research such as clinical case reports was the area of research capacity that MTAS members felt most confident in and less than 20% reported having experience or not needing assistance to do so.

The study of Alberta chiropractors and MTs revealed that while over 70% of the chiropractors in the study sample reported having experience in conducting a literature search, less than 50% of the MT reported this experience (40). Sixty-five percent of the chiropractors reported experience in reading and appraising research compared to the less than 50% of MTs reporting this experience. They found low levels of self-appraised skills in designing research in both groups and report that approximately 20% of the chiropractors and 13% of the MTs had confidence in designing research. Suter, Vanderheyden, Trojan, Verhoef, and Armitage (2007) did not differentiate between qualitative and quantitative research in their questions regarding critically appraising and designing research as was done in the current study, disallowing a direct comparison of findings.

Stuttard (2002) asked the UK massage practitioners in her study about their level of understanding of the research process and found that one-third reported some understanding. In so far as assessing research participants understanding of the research process compares to assessing self-reported knowledge and self-appraised skills, it appears that there is a comparable lack of confidence within the community of UK massage practitioners (42). Similarly, Canadian researchers conducting educational needs assessments have found a lack of research literacy and research capacity among Canadian CAM practitioners including MTs (64,65) as have researchers reporting on a CAM capacity building workshop (66).

It is challenging to compare these results to the findings from studies including conventional and allied health care providers as the strategies used to assess confidence and knowledge are quite different. McColl, Smith, White, and Field (1998), Oliveri, Gluud, and Wille-Jorgensen (2004), Dahm et al (2009), and Jette et al (2003) assessed GPs', hospital doctors', urologists', and PTs' knowledge and skills regarding EBM respectively in relation to study participants reported knowledge of various terms thought to be important in EBM or EBP. In doing so it was found that GPs reported partial understanding of the EBM terms offered (27), hospital doctors reported relatively low levels of understanding of the EBM terms offered (28), as did the urologists (29) and the PTs (33). It must be noted that these authors put forth the idea that competence, knowledge, and skills in EBM or EBP centered around the self-reported understanding of research and epidemiological terms which was not an approach used in the study of MTAS members self-appraisal of research literacy and capacity skills.

That MTs in the current study and in the study by Suter et al. (2007) including Alberta MTs show relatively low levels of confidence in basic skills of searching and critically appraising research suggests insufficient training in these skills both at the pre-service and post-graduation levels of education. Understandably with relatively short educational programs of a maximum of approximately 2200 hours of instruction time in Alberta and Saskatchewan the challenge in incorporating skills in research literacy is acknowledged. This low self-appraised skill in research capacity in these groups suggests that training in the conduct of research within training

institutes at least in these two provinces is still in its infancy. In other provinces where MT is a regulated health profession the educational curriculum may offer greater opportunity to build both research literacy and capacity skills.

Univariate analysis using logistic regression for survey responses from PTs in the study by Jette et al (2003) revealed that their confidence in searching the literature, using databases, and critically appraising research was significantly associated with younger age, fewer years since licensure, and higher degree attainment. In contrast this study showed no association in MTs confidence and self-appraised efficacy in research literacy with respondents' age. However, there was a significant association (chi-square) between all three indicators of research literacy and MTs level of education with a greater percentage of those with higher education levels reporting more confidence. Also appraising qualitative research was significantly associated with MTs years since graduation and years of practice experience with a greater percentage of those less than 10 years post-graduation and practice time reporting more confidence in this skill.

As it is already the case for PTs where attainment of higher levels of education offers greater exposure to training in skills of searching the literature and critically evaluating research, it is hoped that MTs will follow the same path. That a greater percentage of MTs having graduated in the last 10 years reported confidence in appraising qualitative research is likely reflective of the inclusion of clinical case report writing in curriculum requirements in recent years in at least some of the Saskatchewan schools. It may be that age is less a factor in the massage therapy group than in PT since graduates of the short two-year diploma program in MT are more likely to represent a broad range of ages as compared to the lengthy degree programs required for PT.

Research utilization

The majority of MTAS members in the study sample reported sometimes applying research in their practice. Only 11% reported always doing so. Over 60% reported using research by discussing it with colleagues and clients but only one-third used research to influence conditions, policies or practices. Furthermore, the majority (64%) reported having sometimes or always utilized research in some aspect of their work in the past year (overall RU).

Four variables were found to be statistically significantly associated with overall research utilization while holding all other variables constant. The variables found to predict research utilization in this sample of Saskatchewan MTs were the belief that MT practice should be based on research, reference to peer-reviewed journals, reference to online research databases, and number of practice hours per week. The odds of utilizing research were 5 times greater for those who used online research databases, almost 4 times greater for those who believed that MT practice should be based on research, and almost 3 times greater for those who worked more than 20 hours per week and also for those who referred to peer-reviewed journals.

MTs level of willingness to suspend belief in information learned in practice and the year respondents' received their MT diploma were retained as improving the model's fit to the data but did not reach statistical significance. Having completed a research literacy or methods course also improved the model fit in this method of modeling but did not reach statistical significance. Using the forward conditional method, having completed a research literacy or methods course was a significant predictor of RU.

Respondents' sex, age, practice orientation, research experience, willingness to suspend belief in information obtained in massage school, knowledge and experience in conducting a literature search, knowledge and experience in appraising quantitative research, knowledge and experience in appraising qualitative research, or reference to Association publications were not shown to have any important influence on RU.

The results from other studies that similarly investigated associated or predictive factors offer important points of comparison. Estabrooks (1999a;1999c) found that nurses' research utilization was predicted by nurses' attitude toward research as reflected by endorsement of positive beliefs about research(5,47). In a systematic review of studies investigating individual determinants of RU in nursing, Estabrooks (2003) concluded that nurses' beliefs and attitudes toward research was the only category of individual determinants that consistently showed positive effect on research utilization (67). MTs belief that MT practice should be based on research can be considered to be an important reflection of their attitude toward research.

Estabrooks' (1999a;1999c) also found that nurses' RU was predicted by their level of belief suspension (5,47). In the current study, MTs' willingness to suspend belief in information from research when it contradicts knowledge gained in practice experience did not reach significance statistically in the model but did enhance the model fit demonstrating some, though not a statistically significant influence on MTs' RU. The remaining variable found to predict nurses' RU was related to attendance at in-services (5,47). Estabrooks (1997) (unpublished dissertation) assessed this variable as the number of continuing education or in-service sessions of one-half hour to 4 hour duration, attended by nurses in a given year. Continuing education is a mandatory component of membership with the MTAS and members are responsible for accruing a set number of education credits per credit cycle. Therefore, this variable was not considered in the MT study.

That MTs' age, sex, years worked and level of education were not found to be associated with RU when all variables are considered together is a finding consistent with the results of the study of nurses' RU (5,47). Suter Vanderheyden, Trojan, Verhoef, and Armitage (2007) also tested respondents' sex and number of years in practice as covariates and found these factors not to be predictive of applying research in practice in their study with Alberta MTs and chiropractors (40). That the odds of MTs in this study utilizing research were greater in those who worked more hours per week is in contrast to the findings from the study on nurses' RU. Estabrooks (1997) (unpublished doctoral dissertation) found that number of hours worked per week was not

a significant predictor of nurses RU and while not significant, its effect was in the opposite direction.

Suter Vanderheyden, Trojan, Verhoef, and Armitage (2007) found that the odds of applying research to practice were two times higher for those chiropractors and MTs who frequently referred to peer-reviewed journals comparing similarly to the finding of the present study in where the odds of utilizing research was three times greater for the MTs who reported reference to peer-reviewed journals. Suter Vanderheyden, Trojan, Verhoef, and Armitage (2007) tested agreement with the statement “research adds credibility to my discipline” as a covariate in their model and found this variable (considered to be reflective of perception of research) to be a significant predictor of likelihood of applying research in practice for Alberta MTs and chiropractors. This compares similarly to the use of the statement “MT practice should be based on research” as a covariate and reflection of perception that was found to influence the likelihood of RU in the Saskatchewan MTs’ practice.

Comparing the findings from this study regarding MTs research utilization with the findings from the conventional and allied health studies is again challenging in that McColl, Smith, White, and Field (1998), Oliveri, Gluud, and Wille-Jorgensen (2004), Dahm et al (2009), and Jette et al (2003) assessed GPs’, hospital doctors’, urologists’, and PTs’ use of evidence-base medicine or evidence-based practice as synonymous with their utilization of research. McColl, Smith, White, and Field (1998) reported that the median self-rated estimate of the percentage of GP respondents’ practice that was evidence-based was 50%. Oliveri, Gluud, and Wille-Jorgensen (2004), found that 20% of the hospital doctors in their study reported “always” practicing EBM while the majority reported “sometimes” practicing EBM. Jette et al (2003) found that 84% of the PTs in their survey agreed or strongly agreed that they need to increase their use of evidence in daily practice. The findings from these studies in conventional and allied medicine fields published seven to twelve years ago compare remarkably similar to the results of the present study that reveals most MTAS members reporting that they sometimes utilized research in their practices but few reporting that they always do so.

The extent to which MTAS members utilize research also is consistent with the findings from Suter, Vanderheyden, Trojan, Verhoef, and Armitage (2007) who found that most chiropractors and MTs in their study reported sometimes using research in their practice while 30% of chiropractors and 13% of MTs reported that they always do so. Stuttard (2002) also found that the majority of UK massage practitioners in her study reported sometimes using research in their practice and that less than 15% reported often using research.

With respect to the theoretical framework of Roger's Diffusion of Innovation it can be that in MT, other CAM practices, and in allied and conventional medicine practices there is some evidence of the diffusion of ideas generated through research having progressed through the stages of knowledge of the innovation, persuasion, decision, implementation, and confirmation. That this diffusion is currently insufficient to meet the ideals of evidence-based practice is also evident in all health care services considered. The blocks seem clearly to be occurring at the stages of knowledge of or awareness of the innovation but also in knowledge with respect to understanding of the innovation or research. The latter is evident in terms of challenges all groups appear to experience in critically appraising research and perhaps particular to the MT participants the challenge also extends to understanding the process of research.

5.2 Exploratory Findings

The present study revealed an apparent distinction between endorsement of research-informed practice versus research-based practice. More therapists agreed that MT practice should be informed by research than based on research. Study informants responses revealed that this distinction is made variously by the criteria of force of the statement, or perceived availability of the evidence, or the type of research. The phrase "research-informed Massage Therapy" was introduced to me as a participant in a Canadian National Task Force on Outcome-based Practice meeting in 2005 and this phrase has since become familiar in the lexicon of the Canadian Massage therapy research community but to my knowledge has not been defined in any published MT literature. Results of this study show that this phrase has apparent meaning to MT practitioners in Saskatchewan as well but that meaning is not clear and requires further investigation.

This study also revealed evidence that a portion, (up to 10%) of MTAS members are not clear about their own beliefs regarding some aspects of research. While Suter, Vanderheyden, Trojan, Verhoef, and Armitage (2007) also offered a “don’t know” response category in their study of Alberta chiropractors and MTs, the frequency of this response from the Alberta MTs was not reported in their published paper. MTAS members held strong and unequivocal beliefs about what research adds to the profession in terms of credibility, improved care, and treatment evaluation but less certainty in their opinions regarding responsibility to practice based on or informed by research and to undertake mandatory research education in literacy and capacity.

While the majority of respondents did report believing that research education should be a mandatory component of MT education and training the level of uncertainty shown by some may be attributable to unfamiliarity with the research process due to a lack of exposure in pre-service training. That more practitioners who had completed a research literacy or methods course agreed that research capacity education should be mandatory provides evidence for this explanation. While this topic was not explored explicitly in the case study interviews some informants talked about having no research training as part of their massage school experience and some spoke of producing clinical case studies as a requirement in their MT school.

The finding that more practitioners working fewer hours (20 hours per week or less) were in agreement that MT practice should be based on research as compared to practitioners who worked more hours per week is difficult to interpret. It is an especially interesting finding in that the results of the multivariate analysis in this study revealed that the odds of utilizing research was greater if participants worked more than 20 hours per week. A significant association was also found in the univariate analysis with a significantly greater percentage of those who worked more hours per week reporting that they sometimes or always utilized research in their work. It is possibly that those who have more contact hours with clients regard their practice experience as a more appropriate basis for MT practice than research as they have more practice experience. The difficulty in explaining this particular findings points to the need for more investigation into just what “MT practice should be based on research” means to all practitioners involved in MT practice.

The finding that a greater percentage of the practitioners that had never participated in a research project agreed that MT practice should be informed by research as compared to those who had participated in MT research is interesting. Agreement that MT practice should be based on research was not found to be associated with prior participation in MT research. Participants' responses from the interviews may help to understand this finding. It was related in the interviews by some of the participants that the type of research to which one is referring influences whether it should be used to inform practice or should serve as a basis for practice.

Specifically, it seemed that whether or not research could inform or be a basis for practice depended on the strength of the evidence inferred by the type of study design with clinical trials producing stronger evidence and thus more useful as a basis for practice and designs such as case reports providing weaker evidence and thus more appropriate to inform practice. Results from the survey showed that the most common type of research in which participants had been involved was clinical case reports. Perhaps the greater direct experience with this type of research impacted on the survey responses resulting in the found association between research experience and endorsement that MT practice should be informed by research.

Two of the personal and professional factors that were not significantly associated with participants' perception of research offer valuable information regarding current debate within the MT field on the present and future status of MT as an evidence-based health care practice. Slightly more than half of the survey respondents reported working as sole practitioners, followed closely in number by those working in clinic environments and few respondents (4%) worked in spa environments. Treatment of musculoskeletal conditions was the reported practice orientation of the great majority of survey respondents (85%) with few (2%) claiming an orientation of relaxation therapy. The remaining respondents suggested an orientation either representing both treatment and relaxation or offered specialized modalities (for example lymphatic drainage therapy) or populations (for example sports massage or pregnancy massage). As none of the interview participants worked in a spa setting and all articulated a clear treatment orientation the case studies did not offer opportunity to explore the views of those in a different practice setting and orientation.

It is commonly and hotly contended in the field that there is a division in purpose and goals between practitioners who focus on relaxation as their orientation within the practice of massage therapy and those who focus on treatment of musculoskeletal complaints. That this study revealed no association between perception of the importance of research in MT practice or in the outcome of overall research utilization and level of clinically-oriented focus suggests that this perceived dichotomy may be false, at least with respect to research perception and utilization. It is important to note however as few spa practitioners and/or those with a relaxation therapy focus responded to the survey the survey responses represent the views of clinically oriented therapists to a larger degree. No data is available on the number of practitioners who work in Spas and/or have a relaxation focus within the entire membership of the MTAS members. Additionally, it must be recognized that some MTs work in a spa environment and have a clear treatment of musculoskeletal clinical orientation to their work and yet discussion of this distinction is beyond the scope of this study.

MTAS members' positive perception of research was also confirmed by the small number (less than 10%) of respondents that declared that they were never or rarely willing to change their beliefs or practices when information from research contradicts knowledge they obtained in massage school or in practice experience. However as expected, practitioners were less likely to be willing to suspend belief in knowledge from practice experience than from massage school. Interestingly, more of the older practitioners and those with more practice experience were always willing to suspend belief in prior knowledge when faced with new information from research. From my own two decades of experience as a RMT I would suggest that this may, at least in part, reflect acceptance of the adage that "the more you know the more you know you don't know".

While reported self-efficacy in all research literacy and capacity skills was low, MTAS members in this survey are more confident and experienced in reading, critically evaluating, and producing qualitative research (such as clinical case reports) than quantitative research. This may be due to pre-service curriculum requirements at least in some Saskatchewan schools in writing clinical case reports or studies as was reported both by survey respondents and in the experiences of

some of the informants. The qualitative findings from the informants related events of their successes and challenges regarding research revealed that some but not all had the necessary skills to effectively search for and critically appraise research information, and some but not all had some knowledge and experience in conducting research.

As was the case with research perception, again regarding self-efficacy in research literacy and capacity there was no significant association with MTs practice setting (sole practitioners or other) or whether their practice focus was treatment based, relaxation based or other. Not surprisingly, a significant association was found in univariate analysis between research education and self-appraised research literacy and capacity in that more practitioners in the survey who had taken a research literacy or methods course reported confidence in all research skills as compared to colleagues who had not. This suggests that research education may play an important role in improving MTs self-efficacy in research skills. It is important to note that only 22% of the sample reported having completed a research literacy or methods course.

Having post-secondary education in addition to a MT diploma, having experience participating in MT research, being an RMT for less than 10 years, and male gender were factors each associated with at least one aspect of research literacy and capacity. It is likely that additional and higher education, experience with research, and exposure to more recent MT education all simply provide increased opportunities to learn research skills. Gender issues self-efficacy regarding research skills could be explored in future research.

5.3 Study Limitations & Strengths

Although the term “research” was carefully defined in the survey instrument there is evidence from both survey responses and informants’ responses of confusion regarding what does or does not constitute “research”. This became apparent in the responses by survey participants who offered numerous examples of “other” research-based resources with an uncertain research base such as authoritative texts and manuals. Prevalent evidence of the assumption that common

educational materials used in MT education curriculum in Saskatchewan schools are research-based was shown by several case study participants' responses.

The survey item that served to assess the extent to which MTs engage in overall research utilization was modified, with permission of the author, from the Research Utilization Survey (52). The author of that survey instrument however, instructed respondents with the following additional statement: "Do **not** count as research, things you learned in the nursing school where you did your basic nursing training" (type-face bolded in original). In retrospect, my failure to include this instruction may have resulted in practitioners considering their massage school notes and textbooks as "research". Interestingly though, my failure to include this caveat uncovered an important issue that must be addressed in efforts spanning initiatives from improving the quality of pre-service MT education to improve research uptake in MT practice.

The low response rate (41%) obtained in the survey of members of the MTAS is a limitation of the study. This response rate is comparable to the response rates reported in the studies of Alberta chiropractors and MTs, Alberta nurses, American urologists and PTs with rates of 40%, 41%, 45% and 49%, respectively (40, 5,29,33,). However, given that this group is unaccustomed to being subject to research I am delighted with the response. It remains though that the possibility of a response bias must be considered especially with respect to the nature of this investigation. It is certainly possible that more MTAS members with little interest in research failed to respond to the survey.

Clearly, attempts in the qualitative component of the study to recruit participation by members with both negative and positive perceptions of research and high and low levels of reported research utilization failed to produce the desired opportunity to hear the views of all. I had hoped that individuals with multiple perspectives on the role of research in MT would agree to tell me about specific events or situations within their work but only those with positive regard for research replied that they were willing to participate.

As in the other studies presented in the literature review, the limitation of self-report in assessing attitudes, knowledge, skills, and behaviours must be acknowledged. As the topic of this investigation was perception and utilization of research and more broadly evidence-based health care practice there is undoubtedly an issue of the motivation for social acceptability in the responses gathered both in the quantitative phase of the study and in the qualitative phase of the study.

The main strength of this study is the mixed-methods design. By including the collection of quantitative data I was able to compare the results of this study of MTs' perceptions and utilization of research with the results of other published studies investigating perceptions and utilization of research and evidence-based medicine or practice in a various health services disciplines including conventional, allied, and CAM practices. By including the collection and analysis of qualitative data I was able to allow the research participants to have a greater voice in communicating their views, opinions, perceptions, and experiences.

Through the use of the two methodologies it was possible to compare and corroborate results obtained from different paradigms of inquiry. The inclusion of the qualitative data collection allowed for deepening of my understanding through the participants sharing of their experiences. This also allowed opportunity to seek clarification of issues identified as needing follow-up in the quantitative phase of the study. For example, I was able to ask case study participants about their interpretation of "research-based" and "research-informed". I was also able to understand more clearly that confusion exists concerning what constitutes "research", a discovery fuelled by survey responses to questions of use of resources. Not only did this opportunity lend strength to the present study it also suggested direction for future research.

5.4 Practical Implications

The findings of this study have substantial practical significance for the community of interested stakeholders in the discipline of MT. From the evidence provided in this study that MTAS members' perceive research as important to the practice of Massage Therapy, stakeholders can

proceed with confidence to support further utilization of research. The findings from this study have practical implication for three key stakeholders, namely Saskatchewan MT schools, the professional association of the MTAS, and the broader profession both nationally and internationally who serve as potential and important channels for the diffusion of research into practice and thus the achievement of evidence-based MT practice. The theoretical framework of diffusion of innovation offers useful guidance in how to proceed with efforts to improve the diffusion and increased utilization of research in MT practice through the stages of knowledge, persuasion, decision, implementation, and confirmation.

Implications for Schools of Massage Therapy

To facilitate the goal of helping students as future practitioners to successfully engage in evidence-based practice schools can target their efforts first at the awareness of innovation. Specifically, a challenge for schools will be the incorporation of more research based material in teaching. It has been noted that MT education curriculum is increasingly utilizing evidence-informed, outcomes-based models of pre-service training (68) but curriculum is inconsistent in Canada and internationally. The availability of MT research products is increasing, from single studies regarding new theories of the mechanisms of action and related new ideas of the physiological and psychosocial effects of massage, to systematic reviews and meta-analyses that provide valuable information regarding evidence to support MT interventions and those that show where such support from research is lacking. Including research studies into course instruction will aid in improving awareness of research.

The next step within the diffusion process is the necessity of providing knowledge, not just of the existence of research, but also knowledge pertaining to understanding research. More time is needed in the curriculum for teaching basic critical appraisal skills necessary to evaluate research. Equally important may be a greater emphasis on the teaching of critical thinking. It is through the teaching of critical thinking in evaluating content, source, and the vetting of information that students in Massage Therapy schools and future practitioners must be guided in navigating the complexities of knowledge utilization. In particular, while some textbooks are research-based some are authority-based and information must be evaluated carefully in both.

Information from traditional instruction sources like print textbooks can quickly become outdated in the current fast pace of information generated from science. Additionally, while most articles and papers found in searching online databases are obtained from peer-reviewed journals some articles from popular magazines are found in CAM oriented databases. Valuable information is available from a multitude of sources and all new information must be evaluated critically.

While the findings of this study show that attitudes toward research are largely positive amongst the MTAS members participating in this study, schools of Massage Therapy can influence or enhance this stage of persuasion by findings ways to incorporate the enculturation of research as a value. Perhaps equally of value is the enculturation of a spirit of inquiry and encouragement for life-long learning. Teaching the principles of evidence-based medicine or practice would serve to share the relative advantages or benefits that engaging with research offers the individual practitioner and the profession at large, a known critical element in the diffusion of innovation.

School educators and administrators can support the decision to adopt new ideas from research into MT practice by serving as opinion leaders and modelling these adoption behaviours to improve the observability of the diffusion. They can do so both in their teaching methods and use of materials and in sharing relevant experience of utilizing research. In addition , the trialability of the innovation can be enhanced and the degree of hampering complexity reduced, by providing students with the necessary skills in finding and critically evaluating research but also in providing opportunity to use research and conduct research in while in school.

Implications for the Professional Association

The potential role of the professional association in supporting future opportunities for the membership are clear from the findings in this study with respect to the process of diffusion . The challenge for the professional association will be in findings ways to enhance knowledge and awareness of research. The MTAS made a valuable and necessary contribution by

negotiating access to SHIRP for all MTAS members. The next step will be to increase awareness of this access and promote its use.

A related implication is the need to provide educational opportunities for members to enhance their skills in searching and critically appraising the literature. Strategies to provide these educational opportunities include the formation of journal clubs and the provision of workshops in research literacy and methods and also on the principles of evidence-based practice. It has been noted in the literature that while perceived levels of research literacy and capacity in practicing therapists have been found to be low, interest in obtaining research-related education to increase literacy and capacity skills has been demonstrated (40, 64-66).

The leadership within the MTAS organization have the opportunity to function as opinion leaders to facilitate the diffusion of new ideas, practices, and behaviours from research into MT practice. They can do so principally by setting a vision that evidence-based practice is the norm within the organization. They can promote the beneficial consequences of an organization and its membership that engages in evidence-based practice by demonstrating both the influence on the professionalization of MT and the impact on care of clients.

The decision to adopt or reject innovation as it pertains to research utilization in general falls also on the organization and not just on its members. Such a decision can then be communicated in the mission of the organization. The system faces the additional challenge of finding ways to not only support but to reward MTAS members' implementation and ongoing confirmation decisions to adopt research utilization. Strategies could include expanded continuing education credit for conducting and publishing research and also for activities that enhance awareness and knowledge of research such as attending research lectures and conferences.

Implications for the Broader Professional & Research Community

Central to the diffusion of innovations is that it is a social process that requires communication in the creation and sharing of information through interpersonal networks as well as other

communication channels. In Canada, this sharing of information is hampered by the lack of a strong national association and the absence of regulation as a health care profession in all but three of the provinces. Dialogue regarding evidence-based practice and development of shared competencies including elements of required competencies for research utilization do currently occur between the three provincial jurisdictions in which Massage Therapy has been granted self-regulation by those governments. However, the provincial organizations in provinces in which MT is not a regulated health care profession have limited opportunity to share in and benefit from this dialogue and development. The achievement of this status in Saskatchewan would aid in the diffusion of innovations for the benefit of the profession and ultimately for the benefit of those served by MT care.

Nationally, organizations such as the Holistic Health Research Foundation of Canada need the financial support of stakeholders to continue to provide funds as they do for Massage Therapy research and for opportunity for researcher-practitioners to become involved in the conduct of research. Internationally, organizations such as the Massage Therapy Foundation need financial support to continue to provide funds for MT research and research-related activities. The MT Foundation is currently engaged in the development of Best Practices Guidelines for MT, a channel for communication of research for implementation in practice that requires stakeholder support (1).

To enhance the diffusion of new ideas from research more “pre-appraised” sources of MT research are needed in the form of systematic reviews in the CDSR. The production of annual narrative reviews and evidence summaries of MT research with publication in an electronic, open-access, peer-reviewed journal such as the International Journal of Therapeutic Massage & Bodywork would enhance the diffusion of new ideas from research. In addition, key members from the MT professional and research communities ascertained that a peer-reviewed, international electronic journal for massage therapy could help to further develop research literacy and capacity within the profession (69).

5.5 Future Research

Concepts explored in this study need to be expanded to more fully develop understandings of research perception and utilization. For example, it would be helpful to seek to understand the nature of the uncertainty MTs appear to possess regarding their own opinions about the role of research in MT practice. It would also be valuable to assess the current awareness within the community of MT of what constitutes research, as well as awareness of the MT studies and research-based MT resources available to date. In addition, future research should seek to assess the perceived relevance of the available research to the work of MT, to the educational system, and to inclusion in the health care system.

While this study offers foundational information regarding a conceptual model of research utilization specific to Massage Therapy a fully developed conceptual model is needed. Such a model would additionally aid in informing stakeholders regarding future directions necessary in providing quality care and in the continued professionalization and acceptance of Massage Therapy in health care in Saskatchewan, the rest of Canada, and internationally. The development of such a model should be considered for future research.

Areas of consideration for future research should also include investigations of how MTs utilize non-research evidence in their practices. The tendency for health services researchers to use the terms of evidence-based medicine and evidence-based practice as synonymous with research utilization leaves room for a more fulsome assessment of how MTs and other health care providers use all forms of evidence in their work. An expanded study on the sources of practice knowledge in the practice of MTs would be valuable.

Future research regarding MTs perceptions and utilization of research should seek to find ways to include the voices, views and opinions of greater numbers of practitioners. Studies using focus groups could potentially accomplish this goal. It would be interesting to investigate the views, opinions, and practices of therapists across Canada and internationally.

An important inclusion in future research would be an assessment of practitioners' computer access and use. It would be of value to know the proportion of MTAS members who have access to the Internet and to online databases. Information on MTs capacity or digital literacy is also needed.

6.0 Conclusion

My professional involvement in the field of Massage Therapy as a practitioner, educator, and volunteer in various leadership roles and my current role as a researcher has lead me to conclude that there is a need to further the case for the conduct and utilization of research in this emerging health care discipline. The increase in published research in health sciences generally and Massage Therapy specifically will hold little value for either improved client care or improved professionalization of the field unless practitioners are aware of it and make use of it. This study has shown that a gap does exist between what is known from research and what is utilized in practice. As the volume of MT is increasing at a rapid rate this gap threatens to widen.

Many things are new in the very old profession of Massage Therapy. Massage Therapy research is a new innovation. Evidence based Massage Therapy practice (explicitly including research evidence) is a new phenomenon. The studies that exist exploring research perceptions and utilization in CAM and conventional health care, including this one, provide evidence that there is yet much to do in aiding the diffusion of innovation from knowledge and persuasion to implementation.

From the findings of this study and from the review of the literature available I am led to conclude optimistically that while the current status of actual research utilization is low the prospects of improving that status among members of the Massage Therapist Association of Saskatchewan are good. Indeed the findings from this study show that MTAS members hold research in positive regard, a known necessary precursor to actual research utilization. The self-appraised research literacy and capacity skills in the study sample are low. Necessary skills can be acquired if learners are willing and opportunity is provided.

However, enthusiastic conclusions and forecasts must be tempered with the realization that other health care providers, conventional and CAM, having shown positive perceptions of research within their communities and presumably with advanced opportunities to learn and resources to use to incorporate research into practice, continue to struggle with reducing the gap between evidence and practice. Perhaps the future story for CAM professionals including massage therapists will be different. Perhaps conventional medicines' privileged and unquestioned status within the medical model reduces the force driving many complementary providers such as MTs to improve their care and their visibility doing so to be included as valuable contributors in the field of health care. This promise of inclusion has never been as closely in view as it is now as proponents of integrative medicine view massage therapy favourably.

This study has, I believe, contributed to the body of knowledge regarding MTs' perceptions and utilization of research. Also this study has contributed to the involvement of MTAS members in the process of research. Evidence that mere immersion in the innovation of research can itself be of value was demonstrated to me during one of the interviews conducted as part of this study. I will give the final voice to the participant who stated, "I think even this interview is putting more thoughts and ideas in there that I will think about and might change the way I think."

Appendix A – Survey (9 pages)

MASSAGE THERAPISTS' RESEARCH UTILIZATION AND PERCEPTIONS TOWARDS RESEARCH

A SURVEY OF MEMBERS OF THE MASSAGE THERAPIST ASSOCIATION OF SASKATCHEWAN 2009

The purpose of this survey is to assess Massage Therapists' perceptions toward research and how research is used in Massage Therapists' practice.

There are no right or wrong answers to these questions. This questionnaire focuses on finding out the relative importance you place on research as one of the sources of knowledge that you use in your work.

Please answer what you do, not what you think you should do.

Confidentiality: Your questionnaire answers are completely anonymous and findings will be released only as summaries in which no individual's answers can be identified. Study ID numbers will be the only identifier on the survey.

Your participation in this study is voluntary. Your consent is implied when you return the questionnaire in the enclosed, self-addressed stamped envelope. Completed questionnaires (with no identifying information from any of the participants) will be stored in a locked cabinet in the office of Dr. Leis in the Department of Community Health & Epidemiology at the University of Saskatchewan. This study received approval by the Behavioural Research Ethics Board of the University of Saskatchewan on August 11, 2009.

Student Investigator:
Donelda Gowan-Moody
Department of Community Health & Epidemiology
University of Saskatchewan

Research Supervisor:
Dr. Anne Leis
Department of Community Health & Epidemiology
University of Saskatchewan

Thank-you in advance for taking the time to complete this questionnaire.

PART I - PERCEPTIONS OF RESEARCH

To help ensure you interpret the following questions in a way similar to other respondents, please use the following **definition of research** throughout this questionnaire:

Knowledge generated through the scientific or systematic process of inquiry by a trained student researcher, practitioner-researcher, or academic researcher. To count as research, scholarly work would be peer-reviewed (scrutinized and screened for quality by other experts) and published in a journal or book, or online in a collection like the Cochrane Library, or presented at a research conference or symposium. Some examples of research would include clinical case reports, case studies, surveys, case-control and cohort studies, clinical trials, randomized controlled trials, systematic reviews and meta-analyses.

1. For each statement below, please circle the number that best represents your belief:

	Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know
a. Research adds credibility to my discipline	1	2	3	4	<input type="checkbox"/>
b. Research leads to improved client/patient care in my discipline	1	2	3	4	<input type="checkbox"/>
c. Education in finding, critically evaluating, and applying research should be a mandatory component of training in my discipline	1	2	3	4	<input type="checkbox"/>
d. Education in conducting research should be a mandatory component of training in my discipline	1	2	3	4	<input type="checkbox"/>
e. Research helps evaluate existing treatments in my discipline	1	2	3	4	<input type="checkbox"/>
f. Massage Therapy practice should be based on research	1	2	3	4	<input type="checkbox"/>
g. Massage Therapy practice should be informed by research	1	2	3	4	<input type="checkbox"/>

2. How willing are you to change your beliefs or practice when information from research contradicts something you.....:

	Never willing	Rarely willing	Sometimes willing	Always willing	N/A
a. Learned <i>prior to</i> massage school	1	2	3	4	<input type="checkbox"/>
b. Learned <i>in</i> massage school	1	2	3	4	<input type="checkbox"/>
c. Learned in your practice experience	1	2	3	4	<input type="checkbox"/>

PART II - USE OF RESEARCH

3. For each statement below, please circle the number that best describes you:

	Never	Rarely	Sometimes	Always	N/A
a. I apply research findings in my practice	1	2	3	4	<input type="checkbox"/>
b. I seek specific research findings for individual client's presentations or problems	1	2	3	4	<input type="checkbox"/>
c. I discuss relevant research with my clients	1	2	3	4	<input type="checkbox"/>
d. I discuss research findings with my colleagues	1	2	3	4	<input type="checkbox"/>
e. I use research to attempt to change conditions, policies or practices relevant to my discipline	1	2	3	4	<input type="checkbox"/>

4. When was the last time you referred to the following resources for research-based information related to your work?

	Never have	Within the last year	Within the last month	Within the last week	N/A
a. Research websites (ex. CAMline)	1	2	3	4	<input type="checkbox"/>
b. Evidence-based textbooks (ex. Outcome-Based Massage)	1	2	3	4	<input type="checkbox"/>

	Never have 1	Within the last year 2	Within the last month 3	Within the last week 4	N/A
c. Peer reviewed journals (<i>e.g.</i> , Journal of Alternative and Complementary Medicine, International Journal of Therapeutic Massage & Bodywork)					<input type="checkbox"/>
d. PubMed/Medline/CAM on PubMed/other online research databases	1	2	3	4	<input type="checkbox"/>
e. Cochrane Database of Reviews (online Cochrane Library)	1	2	3	4	<input type="checkbox"/>
f. Massage Therapy research databases (<i>i.e.</i> , MT Foundation database)	1	2	3	4	<input type="checkbox"/>
g. Massage Therapy Association publications (<i>i.e.</i> , MTABC's Research Report)	1	2	3	4	<input type="checkbox"/>
h. Other (specify): _____	1	2	3	4	<input type="checkbox"/>

PART III – OVERALL RESEARCH UTILIZATION

For the next question, please use the following **definition of overall research utilization: The use of any kind of research finding (massage therapy or non-massage therapy), in any kind of way, in any aspect of your work as a Massage Therapist.**

	Never Have 1	Within the last year 2	Within the last month 3	Within the last week 4	N/A
5a. When was the last time you utilized research in your work as a Registered Massage Therapist?					<input type="checkbox"/>

	Never 1	Rarely 2	Sometimes 3	Always 4	N/A
5b. Overall, in the past year, how often have you utilized research in some aspect of your work as a Registered Massage Therapist?					<input type="checkbox"/>

PART IV – RESEARCH EDUCATION

6. Have you ever **completed** a research literacy (how to find and critically evaluate research) or methods (research design) course?

- ☐ No
- ☐ Yes. If yes, was your research course(s) (check ALL that apply):
- ☐ Mandatory, as part of your massage school training program
 - ☐ Optional, as part of your massage school training program
 - ☐ Non-massage college course
 - ☐ University degree course
 - ☐ Continuing education course
 - ☐ Online course
 - ☐ Other, please specify: _____

7. Are you **currently enrolled** in a research literacy or methods course?

- ☐ No
- ☐ Yes. If yes, is your course(s) (check all that apply)
- ☐ Non-massage college course
 - ☐ University degree course
 - ☐ Continuing education course
 - ☐ Online course
 - ☐ Other, please specify: _____

8. For **each** skill below, please select the statement that best describes your knowledge and skill level related to the following activities or tasks:

	Know nothing, and have no practical experience	Know some theory, but have no practical experience	Know some theory and have practical experience, but have not mastered	Know quite a bit, would not need assistance
a. Using the library to find research information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Conducting a literature search	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Know nothing, and have no practical experience	Know some theory, but have no practical experience	Know some theory and have practical experience, but have not mastered	Know quite a bit, would not need assistance
c. Reading and critically appraising quantitative research (such as randomized controlled trials)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Analyzing/ interpreting data (<i>e.g.</i> , statistics)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Reading and appraising qualitative research (such as clinical case reports)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Designing and conducting quantitative research studies such as randomized controlled trials, or clinical trials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Designing and conducting quantitative research studies such as surveys	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Producing qualitative research such as writing clinical case reports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Identifying bias in research	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Writing research grant proposals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Gaining research ethics approval and consent	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART V – RESEARCH EXPERIENCE

9. Please check the statement that best describes your experience with respect to Massage Therapy research:

- ☐ I have never participated in a Massage Therapy research project
(Please go to question 11)
- ☐ I have participated in at least one Massage Therapy research project

☐ I have participated in a variety of Massage Therapy research projects
 10. What type of Massage Therapy research have you participated in (check ALL that apply)?

- ☐ In-House Clinic/Practice Audits
- ☐ Clinical Case Report Study or Case Series
- ☐ Cross Sectional Survey
- ☐ Non-Randomized Clinical Trial
- ☐ Randomized Controlled Trial
- ☐ Systematic Review or Meta-Analysis
- ☐ Evaluation Research
- ☐ Qualitative Research (i.e. case study interviews)
- ☐ Other (please specify): _____

PART VI – SOURCES OF PRACTICE KNOWLEDGE

11. For **each** statement below, please circle the number that best describes you:

The knowledge that I use in my practice is based on.....

	Never	Rarely	Sometimes	Always	N/A
a. information that I learn about each patient/client as an individual	1	2	3	4	<input type="checkbox"/>
b. My intuitions about what seems to be “right” for the patient/client	1	2	3	4	<input type="checkbox"/>
c. My clinical experience as a massage therapist over time	1	2	3	4	<input type="checkbox"/>
d. Information I learned in massage school	1	2	3	4	<input type="checkbox"/>
e. Information from textbooks	1	2	3	4	<input type="checkbox"/>
f. Articles published in peer-reviewed medical journals (for example the Canadian Medical Association Journal)	1	2	3	4	<input type="checkbox"/>
g. Review articles published in the Cochrane Library	1	2	3	4	<input type="checkbox"/>
h. Articles published in peer-reviewed Massage Therapy journals (for example the International Journal of Therapeutic Massage and Bodywork)	1	2	3	4	<input type="checkbox"/>

i. Articles published in Massage Therapy trade journals (for example Massage Magazine, MT Canada)	1	2	3	4	<input type="checkbox"/>
	Never	Rarely	Sometimes	Always	N/A
j. Articles published in electronic magazines (for example MassageTherapyPractice.com)	1	2	3	4	<input type="checkbox"/>
k. Information from colleagues/peers	1	2	3	4	<input type="checkbox"/>
l. Information from conferences/continuing education courses	1	2	3	4	<input type="checkbox"/>
m. What has worked for me for years	1	2	3	4	<input type="checkbox"/>
n. The ways that I have always done it	1	2	3	4	<input type="checkbox"/>

Part VII: Demographic Information:

12. Please specify your age group:

- ☐ Under 30 years
- ☐ 31 – 40 years
- ☐ 41 – 50 years
- ☐ 51 – 60 years
- ☐ Over 60 years

13. Please indicate if you are:

- ☐ Male
- ☐ Female

14. In what year did you receive your massage therapy diploma? _____

15. Approximately how many years have you worked as a Massage Therapist? _____

16. Please indicate the number of hours of your massage therapy diploma program:

- ☐ Less than 2200 hours
- ☐ Approximately 2200 hours
- ☐ More than 3000 hours

17. What is your highest **completed** level of academic education?

- ☐ Diploma
- ☐ Bachelor's Degree
- ☐ Master's Degree
- ☐ Doctorate Degree
- ☐ Other _____
- ☐ Not applicable

18. Are you currently enrolled in a post-secondary program?

- ☐ Diploma
- ☐ Bachelor's Degree
- ☐ Master's Degree
- ☐ Doctorate Degree
- ☐ Other _____
- ☐ Not applicable

19. Approximately how many hours per week do you practice Massage Therapy?

- ☐ 10 or less
- ☐ 11-20
- ☐ 21-30
- ☐ 31-40
- ☐ More than 40

20. What setting best describes your current practice? Please choose one.

- ☐ Sole practitioner
- ☐ Massage Therapy Clinic with two or more Registered MTs
- ☐ Chiropractic Clinic
- ☐ Physiotherapy Clinic
- ☐ Multidisciplinary Clinic
- ☐ Spa
- ☐ Other: _____

21. What context best describes your practice orientation? Please choose one.

- ☐ Relaxation Therapy
- ☐ Treatment of musculoskeletal complaints
- ☐ Other: _____

Thank-you for your time in completing this questionnaire!

Appendix B – Letter of Invitation and contact messages to potential participants

Date:

Dear Massage Therapy Colleague,

You are invited to participate in a research project entitled: “Massage Therapists’ Research Utilization and Perceptions toward Research”. We are writing to ask your help in this study. We are inviting you to tell us about your personal beliefs and practices concerning the relative importance of research-based information to you as an individual therapist, to the work you do with clients, and to the overall profession of Massage Therapy. Only registered members of the Massage Therapists Association of Saskatchewan are being invited to participate in this study.

Health care practitioners, such as massage therapists, use many sources of information in their work including information from scientific research, practice experience, information shared from colleagues, teachers, and mentors, as well as other forms of information such as intuition, values, and beliefs. There is a need to more fully understand how massage therapists use various sources of information and knowledge in their practice.

Study Description

This study is a two-phase study. In the first phase we are asking you to answer questions about how you think about and use research or other sources of information. In the second phase of the study, a small number of survey respondents will be invited by mail to participate in a one-time interview, about their experience using new information, from research or any other source that really impacted or changed the way they do their work as a Registered Massage Therapist in Saskatchewan. While this mailing comes from the MTAS office, no contact information of its members was shared with the researchers. Since the MTAS staff is helping with the mailing of study materials, the personnel may become aware of who has or has not responded.

Completing the questionnaire will take you 15-20 minutes. Completing this survey is voluntary and you may choose not to participate. Choosing not to participate will not affect your membership in the MTAS in any way. In addition, you may answer only those questions that you feel comfortable with.

Confidentiality

The data from this research project will be published and presented at conferences; however, answers are completely anonymous and results will be released only as summaries in which no individual’s answers can be identified. Your contribution to this research project will be kept confidential, and not shared with others outside of the research team. All completed questionnaires will be kept in a locked secure area in the office of Dr. Leis, Department of Community Health & Epidemiology at the University of Saskatchewan for five years and then destroyed beyond recovery.

We do hope that you will take this opportunity to share about your experience as a Massage Therapy professional.

Contacts

This research project is being done as part of my Master of Science program in the Department of Community Health & Epidemiology. My own clinical experience as a Saskatchewan RMT has led me to ask many questions about how to best use information to improve client care and to advance the profession. Results from our study will be used to inform the future development of a framework of research utilization to support Therapists in their work.

Please keep this letter for your record. Completing the questionnaire and returning it in the stamped, self-addressed envelope indicates your consent to participate in this study. We will inform you of any new information that may affect your decision to participate.

If you have any questions concerning the research project, or would like a summary of the results when the study is done, please feel free to contact the researchers at the numbers provided below. This research project has been approved on ethical grounds by the University of Saskatchewan Behavioural Research Ethics Board on August 11, 2009. Any questions regarding your rights as a participant may be addressed to that committee through the Ethics Office (966-2084). Out of town participants may call collect.

Researchers:

Student researcher:

Donelda Gowan-Moody, RMT, BA(Hons), MSc(Candidate)
Department of Community Health & Epidemiology
University of Saskatchewan
(306)-652-1445

Research supervisor:

Anne Leis, MSc, PhD
Department of Community Health & Epidemiology
University of Saskatchewan
(306)-966-7878

Thank-you very much for your help in providing information for this important study! To make the results truly representative of Saskatchewan R.M.Ts, we are hoping that nearly all MTAS members will respond to this survey.

Sincerely,

Donelda Gowan-Moody, RMT, BA(Hons), MSc(Candidate)

College of Medicine**Department of Community Health & Epidemiology**

Saskatoon, Canada S7N 0W8

Royal University Hospital, room 2732

103 Hospital Drive

Date:

Dear Massage Therapy Colleague,

A few days from now you will receive in the mail a request to fill out a brief questionnaire for an important research study being conducted as part of a Master of Science thesis at the University of Saskatchewan. The study concerns Saskatchewan Registered Massage Therapists' use of information in their work.

I am writing in advance because survey research shows that many people like to know ahead of time that they will be contacted. The study is an important one that will help the profession to understand its own professional development challenges and strengths.

Thank-you for your time and your assistance. It is only with the generous help of professionals like you that our research can be successful.

Sincerely,

Donelda Gowan-Moody, RMT, BA(Hons), MSc(Candidate)

Principle Investigator

Reminder

Date:

Dear Massage Therapy Colleague,

Recently, a questionnaire seeking your responses to questions about the use of research by members of the Massage Therapists Association of Saskatchewan was mailed to you.

If you have already completed and returned the survey to us, please accept our sincere thanks. If not, please do so today.

Your participation in this study will help make it a success and it is only by asking professionals like you to tell us about your practice experiences that Massage Therapy can be better understood.

The results of this study will be use to develop support for practitioners and to communicate to stakeholders the valuable contribution Massage Therapists play in the health of Saskatchewan people.

If you have any questions about the study or if you did not receive or have misplaced the questionnaire, please call me at (306)-652-1445 or my research supervisor at (306)-966-7878 and we will get another one in the mail to you today.

Sincerely,

Donelda Gowan-Moody, RMT, BA(Hons), MSc(Candidate)
Department of Community Health & Epidemiology
Faculty of Medicine
University of Saskatchewan
Saskatoon, Saskatchewan

College of Medicine**Department of Community Health & Epidemiology**

Saskatoon, Canada S7N 0W8

Royal University Hospital, room 2732

103 Hospital Drive

Date:

Dear Massage Therapy Colleague,

About a month ago, we mailed you a questionnaire concerning Saskatchewan R.M.T.'s perceptions about and use of research as well as a reminder message. To the best of our knowledge, the completed survey has not yet been returned. Many therapists have already responded and we think the results are going to be very helpful for the profession.

We are writing again because of the importance that your responses hold for helping us get accurate results. It is only by hearing from nearly all MTAS members that that we can be sure that the results are truly representative. I have enclosed a replacement questionnaire and a stamped envelope in case you have misplaced the first one.

I hope that you are able to take the time to complete and return the enclosed questionnaire. Your contribution is valued and will assist in the ongoing development within the profession. This is a critical time to formulate an accurate representation of Massage Therapists perceptions toward research and research use because it will help decision-makers to promote greater understanding of Massage Therapy within the current context of healthcare in Saskatchewan.

Completing the questionnaire will take 15-20 minutes of your time. Massage Therapists in other provinces and internationally have contributed to research projects that have aided in advancing the profession and in improving healthcare for existing and potential clients.

As I explained in my earlier letter, this study is part of my Master of Science program in the Department of Community Health & Epidemiology at the University of Saskatchewan. If you wish further information, or you wish to receive a summary of the results when the study is completed, please contact myself or my research supervisor at the following numbers:

Donelda Gowan-Moody
652-1445

Dr. Anne Leis
966-7878

We hope that you will participate in this study. To make the results truly representative of registered members of MTAS your input is very important. If you have already completed the questionnaire, our correspondence has crossed in the mail and we sincerely thank you for your time and effort.

Sincerely,

Donelda Gowan-Moody, RMT, BA(Hons), MSc(Candidate)

Appendix C – Letter of invitation to potential (phase two) participants

Date:

Dear Massage Therapy Colleague:

You are invited to participate in Phase Two of the research project entitled: “Massage Therapists’ Research Utilization and Perceptions toward Research”.

The overall purpose of the study is to explore Massage Therapist Association of Saskatchewan registered members’ perceptions of research and their self-reported research utilization. The objective of this second phase of the study is to explore, more in depth, how Massage Therapists use new information from a variety of sources in their work.

I would like to interview you about your experiences in your work as a Massage Therapist. The interview is expected to take between 30 minutes to 1 hour and can take place at a mutually convenient time and place or by telephone, depending on what is most convenient for you.

The data from this research project will be published and presented at conferences; however, your identity will be kept confidential. Although direct quotations from the interview may be reported, a pseudonym will be used and all potentially identifying information will be removed from our report. Your anonymity will be preserved at all costs. You may answer only those questions that you are comfortable with.

If you agree to participate in the interview, you will be given a \$40.00 honorarium for your time upon completion of the interview.

This research project is being done as part of my Master of Science program in the Department of Community Health & Epidemiology. As an RMT myself, I have many questions about how best to use information to improve client care and to advance the profession. The results from this study will be used to inform the future development of a framework to support Therapists in their work.

If you would like participate in this second phase of the research project or would like to learn more about the study please contact me by telephone at (306)-652-1445 or by email at dmg128@mail.usask.ca or please fill in the reply form attached to this letter and return it to me in the self-addressed and stamped envelope. You may also contact my research supervisor Dr. Anne Leis at 966-7878 with any questions that you may have about the study. Please keep this letter for your records.

Sincerely,

Donelda Gowan-Moody, RMT, BA(Hons), MSc(Candidate)

Reply Form

If you are interested in learning more about this study please provide your contact information below and return it in the self-addressed stamped envelope provided.

Name: _____

Telephone number(s): _____

Email address: _____

Thank you for your interest in this study.

Sincerely,

Donelda Gowan-Moody, RMT, BA(Hons), MSc(Candidate)
1-306-652-1445
dmg@mail.usask.ca

Appendix D – Written Consent form for qualitative interview participants

Consent Form for Participants for Qualitative Interviews:

Date:

Dear Massage Therapy Colleague:

You are invited to participate in Phase Two of a research project entitled: “Massage Therapists’ Research Utilization and Perceptions toward Research”.

Please read this form carefully, and feel free to ask questions you might have.

Researchers:

Student Investigator:

Donelda Gowan-Moody, RMT, BA(Hons), MSc(Candidate)

Department of Community Health & Epidemiology

University of Saskatchewan

(306)-652-1445

Email: dmg128@mail.usask.ca

Research Supervisor:

Anne Leis, MSc, PhD

Department of Community Health & Epidemiology

University of Saskatchewan

(306)-966-7878

Purpose and Procedure:

The purpose of the study is to explore Massage Therapist Association of Saskatchewan registered members’ perceptions of research and their self-reported research utilization. The objective of this second phase of the study is to explore, in depth, how Massage Therapists use new information from a variety of sources in their work. The interview is expected to take between 30 minutes to 1 hour.

The data from this research project will be published and presented at conferences; however, your identity will be kept confidential. Although we may report direct quotations from the interview, a pseudonym will be given and all potentially identifying information will be removed from our report. Participant’s anonymity will be preserved at all costs. At the end of the interview, the researcher will review the main points with you and you will be given an opportunity to add or withdraw any responses at this time.

Potential Benefits:

There may or may not be any direct benefit to you from participating in this study. We hope that the information learned in this study will be helpful for the Massage Therapy profession to

facilitate the development of strategic planning by interested stakeholders to improve client care and aid in the continued professionalization of Massage Therapy.

Potential Risks: There are no known risks in participating in this study.

Payment for Participation: If you agree to participate in the interview, you will be given a \$40.00 honorarium for your time upon completion of the interview.

Storage of Data: The interview will be audio recorded and transcribed verbatim by the researcher. When transcription is complete, the audio recordings will be destroyed. All data will be destroyed beyond recovery after being stored for a minimum of five years by the research supervisor in a locked secure area in the Department of Community Health & Epidemiology at the University of Saskatchewan. Only the researchers in this study will have access to the study materials.

Confidentiality: All study related materials will bear only your assigned study identification number. Your contributions will not be shared with anyone outside of the research team.

Right to Withdraw:

Your participation is voluntary, and you can answer only those questions that you are comfortable with. There is no guarantee that you will personally benefit from your involvement. The information that is shared will be held in strict confidence and discussed only with the research team. You may withdraw from the research project for any reason, at any time, without penalty of any sort and refusing to participate will in no way affect your membership with the Massage Therapist Association of Saskatchewan. If you withdraw from the research project at any time, any data that you have contributed will be destroyed at your request. We will inform you of any new information that may affect your decision to participate.

Questions:

If you have any questions concerning the research project, please feel free to ask at any point; you are also free to contact the researchers at the numbers provided if you have other questions. This research project has been approved on ethical grounds by the University of Saskatchewan Behavioural Research Ethics Board on August 11, 2009. Any questions regarding your rights as a participant may be addressed to that committee through the Ethics Office (966-2084). Out of town participants may call collect.

Consent to Participate:

I have read and understood the description provided; I have had an opportunity to ask questions and my questions have been answered. I consent to participate in the research project, understanding that I may withdraw my consent at any time. A copy of this Consent Form will be given to me for my records.

Name of Participant: _____

Date: _____

Signature of Participant: _____

Signature of Researcher: _____

Thank you for your participation in this important study.

Sincerely,

Donelda Gowan-Moody, RMT, BA(Hons), MSc(Candidate)

Appendix E – Interview Schedule

Interview Guide:

The following guide directed the case study interviews:

Hi, I'm Donelda Gowan-Moody. Thank you for agreeing to this interview. I appreciate your participation in this research study.

I would like to let you know a little more about what this part of the study is about. I am curious about the role of research in health care provider's work and I look forward to hearing your views on the role of research in the field of Massage Therapy. I want to learn about and from your views and experiences. What I want to understand is how you feel about the use of research in your work as an RMT and also, if you do use research, how do you use it?

I want to find out about your experiences in the Massage Therapy field when what you have learned about something has impacted your practice or your profession. I would like to hear about your challenges and your successes as a Massage Therapist.

Question 1: Please tell me about a specific event or situation that influenced the way you feel about research?

Additional prompts:

What led up to this happening?

What were your thoughts as this was happening?

How did you feel?

Why do you think you chose that course of action?

What were the consequences of this experience?

Did this make a difference? How?

What do you think was the result of this situation?

Question 2: Is research important?

Before we finish our interview today is there anything else that we should talk about that you think is important?

Is there anything that you can think of that would help me? How do you feel about this interview?

Follow-up question: what do the terms "research-informed" and "research-based" mean to you?

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